Amateur Radio

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Number 5
May 2012
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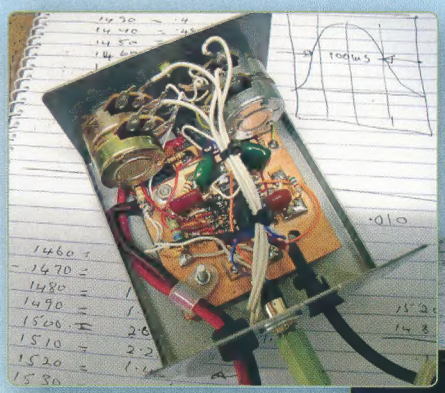
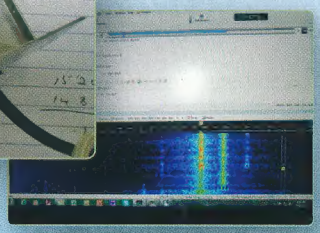
WIRELESS INSTITUTE OF AUSTRALIA





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Portable operations

Reports from Field Days & National Parks

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Volume 80
Number 5
May 2012
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Amateur Radio

The Journal of the Wireless Institute of Australia

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This month's cover
Our cover this month shows Dave Park VK3JDA examining some of the portable kit belonging to Tony Hambling VK3VTH. Several amateurs gathered at Churchill National Park in early March to discuss portable operations relating to activating National Parks. In the background, Peter Fraser VK3ZPF is busy working on 40 m, activating the Park for award hunters. See a brief report in the Amateur Radio Victoria news for the month. Photo by Tony Hambling VK3VTH. We also have reports from club activities for the John Moyle Field Day. The inset images are from the article on an audio bandpass filter designed for BPSK operations by John Sutcliffe VK3TCT, on page 44 (images by VK3TCT).

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Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are welcome and will be considered for publication. Articles attached to email are especially welcome. The WIA cannot be responsible for loss or damage to any material. Information on house style is available from the Editor.

Back Issues
Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies
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Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3PF

AR – slightly smaller but thicker

At about the time that the April issue of *Amateur Radio* was being delivered to readers, the WIA was approached by the printer with an offer to increase the size of the magazine at no additional printing cost to us. The reason was simple – their plant mechanics meant that it is easier for the printer to produce a 64 page issue than a 56 page issue. After some consideration, the WIA accepted the offer, but the decision was made that we needed to slightly reduce the magazine page size. If this decision had not been made, we were very likely to fall over the line into the next postage mass category, which would have increased the postage costs, an important budget consideration.

The net result of the changes implemented this year is that we now have a 64-page issue with colour available on all pages. We have been working with the printer on fine tuning the entire production process so that the appearance of the magazine is as good as can possibly be achieved with the processes used in printing. The Publications Committee was largely pleased with the improvements that have occurred in colour management – overall, the colour preproduction was better in the April issue than in the two earlier issues this year. Yes, there is room for further improvement, and discussions are on-going to achieve additional gains.

In the short term, there is little impact on the overall processes of production. However, it does mean that we will be publishing eight more pages of content each month. The logical result of this change is that authors can expect to see their article printed sooner than would have otherwise occurred. The downside for the Publications Committee is that the size of our stock articles that are ready to publish will diminish. This may ultimately mean that I, as Editor, will have reduced choices as to the articles that can be published in a particular issue.

I therefore ask again that all readers consider placing their fingers on the computer keyboard and camera shutter button to prepare articles for submission. Remember that we also need well composed high quality images for possible use on the cover. Guidelines for preparing articles can be found on the WIA website at: *http://www.wia.org.au/members/armag/contributing/*

Advertising in AR

Do you work for a company that may be interested in reaching amateur radio operators through this magazine? Perhaps it is worth approaching the appropriate manager and mention *AR* as a publication worthy of consideration for the placement of an advertisement. Anyone interested in exploring such options should contact the WIA office to discuss our modest page charges.

Perhaps you work in or have retired from the advertising industry? The WIA would be interested in having a member willing to volunteer some time to find new advertisers for *AR* – not necessarily directly involved in

Continued on page 5

WIA comment

Michael Owen VK3KI

The WIA Annual Conference

This issue of *Amateur Radio* will appear at the beginning of May, the start of the month that ends with the WIA Annual Conference.

I have been thinking about our Open Forum.

Should we try and widen the issues that can be addressed?

Should it be the chance for members to raise any issues they want to raise?

Would this improve our weekend?

Or, do we spend enough time now on "business"?

We receive reports from all those who undertake or manage particular activities on behalf of the WIA, from ARISS to QSLs to awards to publications to contests. In the last couple of years we have asked those submitting reports to identify in their report any issues they would like discussed. And those issues are the issues we can focus on, since we send to each registrant a book of the reports some weeks before the Conference.

The only problem with that is that it only encourages discussion on matters raised by the writers of the various reports.

Already we have identified matters we would like discussed this year. Have a look at the "Comment" published in last December's *Amateur Radio*, under the heading *"Has the Club Grant Scheme run its course?"*

After discussing the sort of club projects that could be supported and some of the options for the Club Grant Scheme, I said:

We invite all clubs to make written submissions on the matters I have raised, and to send them to us. In order to ensure balance, we encourage positive as well as negative reactions to the Scheme as it now is.

We will circulate all submissions we receive with the Open Forum reports that we will send to everyone who has registered for the Annual Conference so all views can be taken into account when it is discussed at the Open Forum.

Well, so far, we have received one submission from one club.

Does that answer the question that was the heading for that Comment?

But, during the year I receive many letters and emails, making many suggestions for the WIA. And, there are many issues of substance that could be discussed. The power limit for Foundation licensees is a hot topic in a number of places. On air behaviour probably attracts more frustrated letters and emails than any other topic.

Of course, we also receive criticism, sometimes justified, sometimes not necessarily fair when addressed to volunteers.

Would opening up discussion on these topics make our Open Forum better?

How important is the Open Forum, anyway? So far, we just allocate about two hours to the Open Forum, after our formal statutory meeting, morning tea and the presentation of merit awards. I know, with the number of Reports that we deal with, and with any serious discussion on a particular issue, how hard it is to chair a meeting with such great time constraints. I also know that most of us just do not want to listen to interminable discussion on one issue or another. But I also know that this is the opportunity for the Board to get a feeling about what members think.

How much time should we allocate to the Open Forum during our Annual Conference weekend?

Clearly, there are only so many hours in a weekend, perhaps even less if some need to leave by the middle of the day on Sunday if there is a long drive home. So, what do those who attend want? Less time allocated to a technical symposium? Or, should time on Sunday be allocated to Open Forum/Technical Symposium activities rather than activities such as the visit to Litchfield National Park near Darwin or Dick Smith's property near Canberra?

I believe that the WIA must be able to make quick and effective decisions, and must appoint Directors who together have the skills and experience to make those decisions.

But equally, I believe those Directors cannot work in a vacuum. They need to know what the members think.

That is why I have been so keen to attend meetings of clubs in the various states.

But should it also be more of a function of the Open Forum?

Perhaps we could invite any member who wishes to have a matter discussed at the Open Forum to submit a paper raising the issue to be included in the Open Forum reports distributed to people who have registered for the Conference.

Or is it just an idea like asking the clubs to tell us whether or not we should have a club grant scheme and if so, for what purposes should grants be made?

I will raise this question by including this *Comment* in the Open Forum papers that will be distributed before the Annual Conference.

WIA news

Illawarra Amateur Radio Society IARS receives WIA Grant

WIA Vice President Phil Wait VK2ASD presented a cheque from the WIA to the Illawarra Amateur Radio Society (IARS) at their new meeting venue at the Figtee RSL Bowling Club. The WIA Club Grant was awarded to the IARS for the development of a portable audio visual pack, which the club intends to take to high schools in their region to promote amateur radio as part of the general science curriculum. The WIA strongly supports this type of activity and congratulates the IARS on its successful application.

Phil was also invited to give a presentation to the club on the current status of Broadband Power Line technology (BPL). It is fair to say that many club members were concerned about the potential of interference from BPL devices being sold by various retailers and also now used by pay TV operators to supply Video on Demand services, and were keen to hear what the WIA was doing in that area. Phil discussed the activities of the ARRL and the RSGB and what lessons can be learnt by us from their dealings with their respective regulators (FCC & Ofcomm).

Ham radio operator needed in Canberra

Bob Bruninga WB4APR, the inventor of the APRS system, has inquired if an Australian amateur astronomer and amateur operator in Canberra would be available on 4-6 June 2012.

Assistance is needed to support a science team of students from the USA to observe the last transit of Venus this century in Canberra.

Bob said "We want a local Australian Ham to be there to see if we can use ham radio and the speed of light to share observations with our sister team in Japan (and any other observation sites)."

Interested individuals for this historic event, contact Bob directly at *WB4APR@amsat.org*

Amateur spectrum used for Australian Formula One Grand Prix

Consistent with past major sporting events, such as the Sydney Olympic Games, the Melbourne Commonwealth Games and previous Formula One Grand Prix, the ACMA licensed some organisations coming from overseas to use, on a temporary basis, a small number of channels within the 70 cm band.

The Amateur Service is a secondary user in this band and has no to claims for protection from interference.

Also one frequency in the 2 metre band was being used. The period of temporary use was from Wednesday 14th March to Monday 19th of March.

The WIA has a flexible attitude to use of amateur spectrum to support these major events that show cases the operational ability of Australian organisers.

Editorial

Continued from page 2

amateur radio, but who might have products that could be of interest to our readers. If you think that you can assist, please contact the WIA office at: *nationaloffice@wia.org.au*

WIA Annual Conference

Time is running out for you to register for the Annual Conference, being held in Mildura late in May. Full details can be found by following the link from the WIA home page: *https://www.wia.org.au/joinwia/wia/2012agm/* As of early April, almost 130 people had registered. The program is looking very interesting for those participating in the formal AGM and Conference program, and for the Partners' Tour. I am sure that all will have a very good weekend. I have registered and arranged leave, so look forward to meeting up with many friends during the weekend.

I may even have some time to play radio during the trip home, perhaps activating some National Parks to add to my tally towards the Keith Roget Memorial National Parks Award.

Cheers,

Peter VK3PF

Participate

May 5 **Harry Angel Sprint**

May 12 **VK/Trans-Tasman 80 m Phone Contest**

VK3 news Amateur Radio Victoria

Jim Linton VK3PC
w www.amateurradio.com.au

Looking at some of the portable gear is David VK3JDA, whilst in the background is Peter VK3ZPF operating from Churchill National Park.

The AGM held this month

As previously advised, the Annual General Meeting will be held at the office, 40g Victory Boulevard, Ashburton on Wednesday May 16 at 8 pm.

Financial members have already been sent a copy of the annual report details including the profit and loss statement, either to their registered email address or hardcopy to those not part of the e-membership system. Please do read this information.

The AGM is a chance to ask questions arising out of the annual reports and enjoy a great social occasion.

First KRMNPA gathering

A well-attended gathering of keen Keith Roget Memorial National Parks Award 'activators' arrived at the Churchill National Park at Lysterfield for a 'Show & Tell' and BBQ day.

Participating were Peter Fraser VK3ZPF, David Parks VK3JDA, Peter Freeman VK3PF, Johnno Karr VK3FMPB and Tony Hambling VK3VTH with XYL Sheryl.

All enjoyed the magnificent weather and the opportunity to have a look at the gear each used when working 'portable' in search of KRMNPA contacts. They displayed various items of specialised portable equipment, with much interest being shown in Peter's VK3ZPF newest home brew switched dipole...the ZPF Special!

This is a five band 'pluggable' dipole which can be deployed as an inverted vee from a single squid pole mount ensuring fast, easy and reliable set up. It takes up minimal space and weight for travel or onsite installation. The ZPF Special has been built by several other attendees also, so it was a great time to check out and compare their antennas with the available analysers on display.

Johnno VK3FMPB now also has a perfectly tuned 40 metre dipole added to his portable kit courtesy of the 'Show and Tell' day. The BBQ lunch was enjoyed by all, along with the continuation of the exchange of ideas and stories from the National Parks. So successful was the inaugural day on Sunday March 11, 2012, that another will be held in Churchill National Park in 2013.

Full information on the KRMNPA is available from *http://www.amateurradio.com.au/awards*

Membership inquiries

To join and support the statewide organisation Amateur Radio Victoria costs $30 for Full or Associate membership and $25 Concession, for two years. New members are most welcome and an application form can be found on our website or posted out on request.

A look at frequency synthesizers

Elmo Jansz VK7CJ

Frequency synthesizers are used in communications equipment such as amateur transceivers, citizens band transceivers and aircraft communications equipment, to name a few well known applications. They are used to generate extremely accurate frequencies for the exciter in the transmitter and the local oscillator in the receiver. They also find wide application in accurate signal generators and modulation analysers.

The idea of a frequency synthesizer has been around since the early 1930s. Unfortunately the circuitry involved was expensive to produce and this held back its applications. The advent of the integrated circuit package has now overcome this problem. Frequency synthesizers consist essentially of a phase locked loop and a divide by N counter that can be adjusted to set the required output frequency. We shall first discuss the basic function of the phase locked loop and then look at the frequency synthesizer.

Phase Locked Loop

The basic phase locked loop (from now on referred to as the PLL) consists of a phase detector, a low-pass filter and a voltage controlled oscillator. See Figure 1. The VCO is a free running oscillator whose frequency can be set by an external LC or RC combination. The output of the PLL is fed back to the input of the circuit where it is compared with that of the input signal. The output of the phase detector is call the 'error' voltage and is proportional to the phase and frequency difference between the VCO and input signals. This voltage is filtered by the low pass filter, to remove any unwanted frequencies such as noise and is applied to the VCO to close the loop. The 'error' voltage forces the frequency of the VCO to change in a direction that reduces the frequency difference between that of the VCO and the input signal.

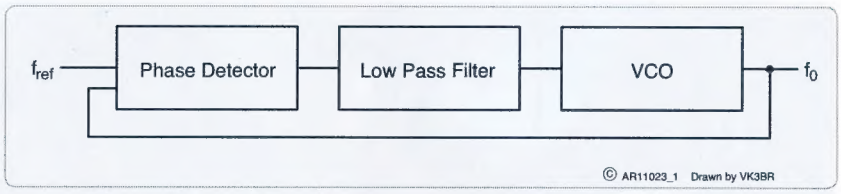

Figure 1: Block diagram of a basic phase locked loop.

When the VCO starts to change frequency it is said to be in the capture state. This process continues until the VCO and input frequencies become identical, when the loop is said to be phase locked. During phase lock the input frequency is identical to that of the VCO, except for a finite phase difference, which is necessary to generate a small voltage to keep the loop operating. After this state is reached the loop follows changes in the input frequency. That is, if the input frequency changes, the loop follows these changes. We now have a system that can follow changes in a given frequency precisely. A basic frequency synthesizer is shown in Figure 2. Observe that the output frequency is an integral multiple of the input frequency.

The connection between the VCO and the phase detector is broken by the divide by N counter. The phase detector produces an output that is proportional to the phase difference between the input reference frequency f_{ref} and the output frequency of the divide by N counter, f_0/N. The counter generates a single pulse for every N pulses received. A stable oscillator produces a square-wave reference frequency f_{ref}. The reference frequency may be any convenient value, but is generally chosen so that a crystal oscillator may be employed. The counter is a programmable binary counter and N is a number programmed into it. The output of the counter is a square wave at the reference frequency and provides the second input to the phase comparator.

The output frequency is given a new value by changing the count value of the counter. This can be done either by thumb wheel switches or by a register into which the new value of N is entered, to control the set point of the counter. The counter recycles after it reaches the value N, which is coded in binary.

Practical synthesizers used in communications systems operate in the ranges outside that of TTL and CMOS counters. We shall look at two techniques used to overcome the problem. These are called prescaling and heterodyne- down conversion. A frequency synthesizer using prescaling is shown in Figure 3.

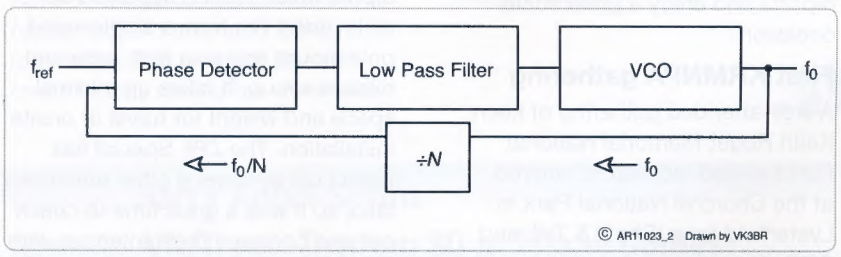

Figure 2: Block diagram of a basic frequency synthesizer.

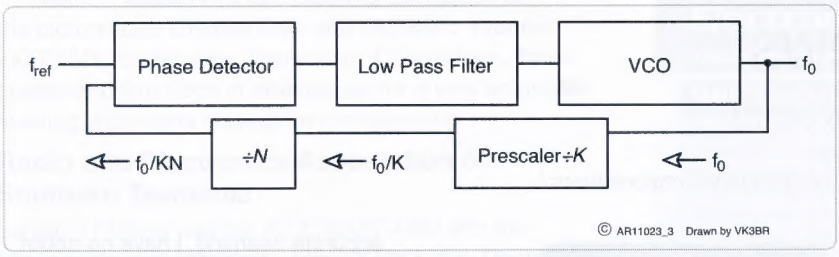

Figure 3: Block diagram of a frequency synthesizer using prescaling.

A fixed counter prescales the VCO frequency by a fixed factor K, to the highest value that can be handled by the circuits, used for the programmable counter. The prescaler only needs to operate at high frequencies, while the rest of the circuit can be made out of low frequency components. The circuit introduces some noise, and requires a low reference frequency or wide channel spacing.

A heterodyne-down conversion circuit is shown in Figure4.

Observe the presence of the offset or local oscillator feeding into a mixer. The mixer receives two inputs, the VCO and the offset. The difference frequency is fed to the counter and then to the phase detector. The mixer output is fed to the phase detector. This method has fairly wide applications, as it permits narrower channel spacing, and consequently faster lock times. It has the problem that the crystal oscillator and the mixer are within the loop, and noise generated in the crystal oscillator or the mixer, appears in the output. In spite of these minor shortcomings, the circuit is quite popular.

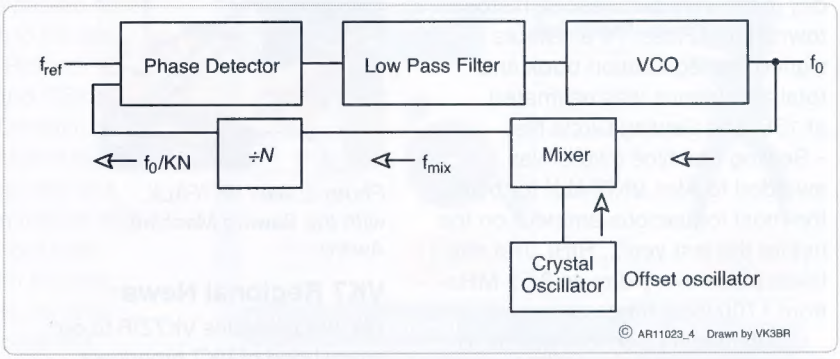

Figure 4: Block diagram of a heterodyne-down conversion circuit.

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VK7news

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Meet the Voice BBQ 2012

The weather was perfect on 18 March 2012 with a warm autumnal day in the very picturesque historic township of Ross. 70 amateurs signed the registration book and total attendance was estimated at 135. The Sewing Circle Net – Sewing Machine award was awarded to Alex VK7FALX for being the most loquacious amateur on the net for the last year....HIHI. The net takes place every day on 3.59 MHz from 1700 local time.

Outstanding Service Awards to amateur radio in VK7 were given to David VK7DM and Winston VK7EM who both have contributed so much to amateur radio especially in the areas of repeaters and technical assistance. Thanks go to Don VK7AY and Vince VK7VH for organisation and running the popular auction, also Brian VK7KBE and Rod VK7TRF for help during the day.

Many people made a weekend of the gathering and camped at the location next to the historic Ross Bridge. This year saw 25 people sitting down to dinner at the local pub on Saturday night, and this was a highlight of the weekend. There is now a website for the Sewing Circle Net which can be found at *http://www.sewingcircle.org/*

Photo 2: Alex VK7FALX with the Sewing Machine Award.

VK7 Regional News

We welcome Idris VK7ZIR to our merry band of VK7 broadcast readers. Idris has bravely agreed to become a reader once a month which lightens the load on all involved. The VK7 Regional News can be heard every Sunday at 0930 local time following the WIA National News at 0900. Details can be found at the website in the heading of this column.

VK7 Records News

Congratulations to Rex VK7MO, David VK7HZ and Joe VK7JG who crossed Bass Strait on 24 GHz digital aircraft scatter in March. This is a remarkable achievement considering all the variables that this microwave frequency presents including alignment with aircraft paths, water absorption, Doppler shift and accurate beaming. I have no doubt this will make a very interesting talk at this year's GippsTech conference.

Cradle Coast Amateur Radio Club

Thanks to David VK7DC for this information. CCARC recently provided communications for the Burnie Equine Endurance Riders event which was the Sheikh Mohammed bin Rashid Al Maktoum Cup – an 80 km qualifier course. The request came through with very short notice, and with limited resources, four CCARC members attended and did a superb job. Thanks go to Ross VK7RW, Dick VK7FORF, Bill VK7ZWK and Keith VK7KW for their efforts and support.

Northern Tasmania Amateur Radio Club

Al VK7AN and Joe VK7JG recently trekked up Ben Lomond in NE VK7 to find VK7RBH on 438.050 MHz with an antenna SWR of 10:1! This proved to be a coaxial feedline problem and fortunately a spare working run was available which was changed over and VK7RBH was back on the air. Please note that the VK7RAE two metre beacon timing has been changed to ID every minute and thanks to Dave VK7DC for reprogramming the controller. Next month I am hoping to be able to report on a restored VK7RNE at Snow Hill on the East Coast with Joe VK7JG currently working on this project.

Photo 1: Group photo of attendees at the Ross MTV BBQ.

March 14 saw NTARC's meeting take place at the picturesque Lilydale Falls and thanks to Yvonne VK7FYMX for this info. There were 13 members, three guests and five dogs in attendance for a very enjoyable evening with some staying on and camping.

Radio and Electronics Association of Southern Tasmania

Sunday 11 March was the 2012 REAST AGM with the following elected: President - Tony VK7VKT, Vice President - Frank VK7FINF, Treasurer - Alan VK7KAJ, Secretary - Justin VK7TW, Committee Members Ian VK7QF and Barry VK7TBM. REAST's March presentation night saw Richard VK7RO give a fascinating presentation on RF impedance measurement for the amateur radio operator. Richard took a packed house from simple measurement techniques through to his latest toy, a digital vector network analyser. Thanks Richard.

On April 1, 2012 Coast Radio Hobart and REAST celebrated the Centenary of the Queen's Domain Marine Wireless Station which was constructed by the Commonwealth Government in 1912 as one of a chain of coastal wireless stations to communicate with shipping. The station originally had a 180 foot high Oregon mast that towered over Hobart with the initial communication by Morse code on 500 kHz. In 1912 the station callsign was POH, later to become VIH, and communicated with the Mawson Expedition via Macquarie Island.

The day was very well attended with displays of marine radios throughout the 100 years, video and historic presentations and tours through the Coast Radio Station.

WICEN Tasmania (Sth)

WICEN will be providing communications for the National Tom Quilty Equine Endurance Event in St Helens on the east coast of VK7 early in June 2012. Roger VK7ARN is still looking for volunteers to assist with radio checkpoints so if you are available on the weekend of 9-10 June, 2012 please contact Roger. All details can be found on the WICEN website at *http://tas.wicen.org.au* If you are interested in undertaking a nationally recognised PUAOPE002A – Operate Communications Systems and Equipment course with the Tasmania Fire Service then please also let Roger know.

All photos are by the author, Justin VK7TW.

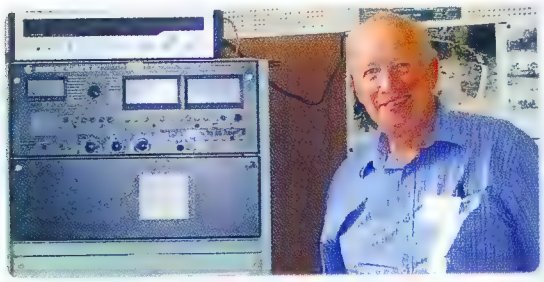

Photo 3: Barry McCann OAM VK7TBM, co-founder of the Tasmanian Small Marine Radio Group who now run Coast Radio Hobart, standing next to an AWA ATS-1 marine transmitter.

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VK3news

Tony Collis VK3JGC

Geelong Amateur Radio Club - The GARC

'Crystal Sets' go viral

The GARC has a well established reputation in the design and build of UHF and microwave equipment and their competitive operation, so when Lou VK3ALB suggested a *Crystal Set* competition for the reception of medium wave commercial stations, with certificates offered for categories such as performance and novelty, this application of the most basic of technology somewhat surprisingly caught the imagination of the membership and the uptake has been quite remarkable.

The judging will take place at the clubhouse, Storrer Street, Geelong starting at 2000 on the 27 April. Inputs from other clubs are welcomed. Please see *www.vk3atl.org* for location and syllabus information.

In order to get a level playing field for the competition, the club has made available, free, germanium diodes and wire for coils and has also sourced a number of high impedance headphones, although with the aid of transformers the use of eight ohm earphones are also being used. No battery powered elements are permitted.

Ken VK3DQW has set up a dedicated earth and antenna system for the members to test their creations and Calvin VK3ZPK has provided an audio amplifier to couple to the audio outputs so that all the contenders result can be heard by those present.

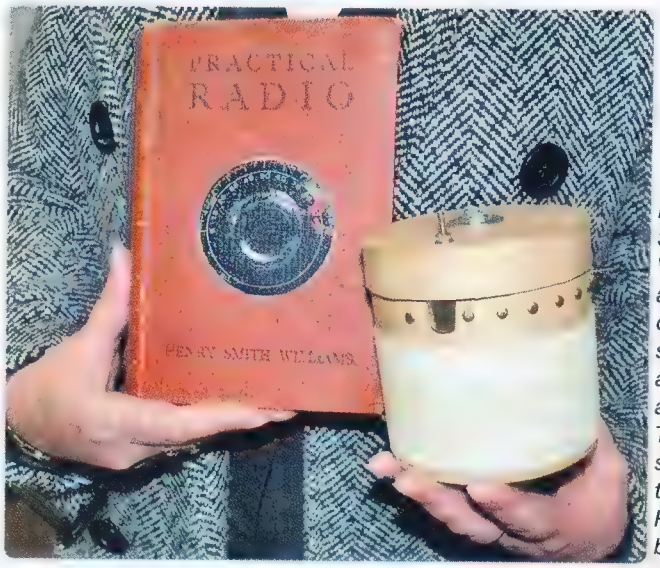

Photo 2: Secretary Jenni VK3FJEN with a multi tap coil coupled to studs which are selected by a rotating lid. This design was sourced from the historical Practical Radio book shown.

Photo 1: Shows the motor cycle theme by Dallas VK3DJ.

Photo 3: Ken VK3NW, who is the principle support for our VHF and UHF repeaters and beacons, with a conventional breadboard design.

New Foundation licensee

Our congratulations to Courtney VK3FGIR who recently received her Foundation licence, and also to Carlo VK3BCL for the dedicated tutorials provided each Friday for Foundation licence students.

Photo 4: Courtney VK3FGIR.

The effects of a metal mast or a (very) stupid mistake!

Felix Scerri VK4FUQ

Although I considered myself quite okay with HF antennas, very recently I realised a basic long term error I had made that prevented optimum operation from my favoured HF antenna type, one wavelength wire loops. In recent years they just never seemed to perform as well as they should have and despite many, many investigations the mystery was never actually solved.

Very recently though, a simple half wave 'sloping' dipole was erected for 20 metres and this simple antenna performed much better than any of my various loop antennas. I simply had to work out why and slowly but surely, and with a little guesswork, the true reason was finally revealed! My 10 metre metal pipe mast! All of my loops were symmetrically 'hung off' this mast and although over the years I had often wondered if this arrangement might not be a good idea especially given that the length of the metal mast was very close to the resonant half wave on 20 metres and ran right through the active radiating area of the loop. I had considered the possibility of undesirable interaction, but then discounted it!

In any case, the loops seemed to work well enough, but my 'gut feeling' was that they should have been better. The experience with my sloping dipole now made me sure that something very basic was seriously wrong. On a hunch, and using the 'Sherlock Holmes' approach to fault finding, the metal mast was considered the most likely suspect, so after my 40 metre WIA news broadcast one Sunday morning recently I was inspired to shift things around to take the pipe mast out of the radiating area of the loop as much as I could and see if that improved things.

Space was restricted, but I managed to put up my pre- existing one wavelength Delta Loop mounted 'on its side' as it were, strung up between my 10 metre metal pipe mast and a shorter 4.6 metre metal pipe mast and fed at the bottom of the side mounted two sloping sides giving, I think, vertical polarisation. A general immediate improvement was noted ,and signals reports, both transmitted and on receive, were much better than previously.

Several other distinct changes were noted and it seemed to me that the mast was interacting very adversely with the loop in several ways. Firstly, by direct absorption of transmitted RF. Secondly, pattern distortion, and thirdly increased noise pick up. In the time following since the repositioning of my Delta Loop, power line noise pick up (always a long term problem on my loops at this QTH, in whatever 'shape' they were), is now markedly reduced. The pattern distortion aspect is interesting as in the past I had noted that loop vertical polarisation was best for DX and loop horizontal polarisation was best 'locally'. Now the Delta Loop performs equally well on both DX and local signals, despite being nominally vertically polarised. I have to think about that one! In the past, a friend presented me with some IPS data that suggested that low angle radiation was best for 'all' paths. As the loop is now working so well vertically polarised, perhaps this is another indication that the Delta Loop is now working as it should, as vertically polarised loops inherently produce excellent low angle radiation!

Needless to say, I am quite delighted at this turn of events! Perhaps I should have realised my error years ago, however a recent internet search found only one article, out of many found, suggesting that metal within the radiating area of a loop antenna was a bad idea! Well, I have certainly learned my lesson! I suspect that the self resonant length of my mast was also a big factor. However the lesson is, whenever erecting a one wavelength loop antenna, keep any or appreciable lengths of metal out of the area of the loop. Then you really will see how good is a one wavelength loop antenna!

Special event station W6G

San Francisco Amateur Radio Club will be holding a Special Event Station - **W6G** - to celebrate the 75th Anniversary of the Golden Gate Bridge on May 26, 2012 at 2000Z to May 27, 2012 at 2200Z. Details can be found at *http://www.sfarc.org/timeline05262712.htm*

Microwave dishes, a confluence and two bottles of red wine

Dan Joyce VK2GG

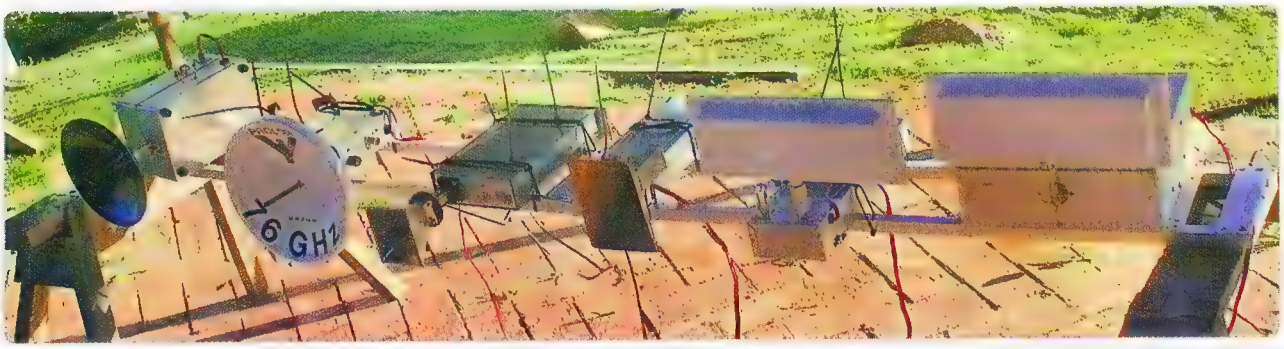

Photo 1: Six transverters on a mounting frame with 2.4 GHz on the left, through to 47 GHz.

GPS confluences are known to many of us, especially if we participate in VHF/UHF field days. A confluence is the spot where, for example, latitude 32 degrees meets longitude 152 degrees. At that spot four maidenhead grids meet *(A grid square corner is indeed a confluence, but not every confluence is a grid square corner, as grid squares are 2 degrees longitude by one degree latitude. A confluence occurs when the latitude and longitude integer degree intersect– there are therefore more confluences than grid square corners. Ed.).* If we activate and work all four grids, especially on the microwave bands, the resulting points are many. To put it mathematically, there would be 16 possible contacts per band for each of two rover operating stations. For three operators there are 48 different contacts possible, etc.

Two operators is fairly simple, so a rotation schedule (or roster) was drawn up by the author, who has had some past life experiences in rostering nurses to wards of a public hospital. Quite simply, rover one activates grid A, then works rover two in A, B, C and D, then activates grid B and so on. Sixteen contacts between rover one and rover two in under three hours would result in maximum points per band. If the schedule were to be repeated in the next three hours, double points would not be possible, because the grids have already been activated. However another 16 contacts per band would augment the total score somewhat.

It just so happens that a number of us in the Sydney/Newcastle area of VK2 were idly speculating on how it could be done in practice. Following the drawing up of a rotation schedule, Jack VK2TRF and I then did a site visit to Gloucester, NSW, with GPSs and radios. We actually conducted two such visits, as there appeared to be a discrepancy between the Google Earth/Google Maps version of where the confluence occurred, and where it occurred utilising topographical maps. This turned out to be a Datum problem. Unless one sets one's GPS according to AMG66, there can be some confusion. *(Ahh.... But which datum to use? According to Wikipedia, since 1999 the Maidenhead grid system has explicitly used the WGS84 geodetic datum, but does not give a reference to this usage. However, the ARRL VHF/UHF Century Club Award Rules explicitly state that the WGS84 datum should be used. A quick search of the IARU website found no obvious document relating to this question. However, the ARRL acts as the International Secretariat for the IARU, so one would expect that the ARRL rules match the definitions decided by the IARU. Therefore, grid square hunters and rover operators should use the WGS84 datum in their GPS receivers to be sure that they are in the correct grid square. The Confluence Project also uses the WGS84 datum as their reference system. The Australian GDA94 datum is compatible with WGS84. Ed.)*

This is easily settled if one sets the GPS to the correct Datum, and sets the display to Maidenhead. As Matt VK2DAG later found out, if using a smart phone, there is no such provision!

OK, so far so good. Now how can one make 160 contacts (16 x 10 bands) in a respectable time with the setting up of dishes, warming up the transverters, filling in the logs and so on? How would five minutes per contact be? Hmmm, that's 13 hours 20 minutes. What about one minute per contact? That's 2 hours and 40 minutes, much better! We settled on a presumed average of 1.5 minutes per contact, which would result in a four hour stint, followed by a much deserved beer or two!

Then came the cunning bit. We mounted the transverters, a mixture of VK5EME, DEMI and

Kuhne devices within the vehicles, which would mean we could work in hail, rain or shine. All power and IF cables were connected to a central control box in the driver's cabin. A six position switch would select one of six microwave transverters to be routed to the IF rig, and multiple power switches would control the 12 V power also.

The result was spectacular, as readers might have seen in the contest results! On the first contest, 13 cm did not work because of a receiver failure. Also much time was used up in aligning dishes for 24 and 47 GHz. In the end we utilised a system of beaconing from one station, before roughly pointing the dish, and having the other station hand-hold the receiving dish on the driver's door window sill until good reception of the beacon was achieved! The two-way contact was then quickly made, before moving to the next band! Phew! That was a little difficult. On the second occasion, Jack VK2TRF drove the car and aimed the dish, whilst Dave VK2CQ conducted the contacts and filled in the logs. Dan VK2GG was solo in the other car, which had to be parked facing the direction of the other rover station!

On the first VHF/UHF field day, the 144 (16 x 9) contacts were made in a little over three hours! We were sitting in the Gloucester Pub receiving SMSs from amateur participants in Sydney who were still out there slaving away! On the second try, we achieved many sets of five minutes per 10 bands, and even a staggering four minutes on one occasion.

Photo 2: The six position IF switch with the FT-817 in operating position.

As an aside, some have suggested that the 'deed' could be done with three or even four operators. Think again – good luck writing a roster for 48 or higher different contacts per operator per band!

On the second field day we arrived at Gloucester the evening prior to the contest, as usual, and did some preliminary field investigations and testing of paths and transverters. Satisfied, we adjourned to the pub for tea and a couple of beers. This is where the two bottles of red wine come in – not a good preparation for a gruelling field day contest. Luckily, 0100 UTC allows for a little sleep-in time, and many cups of coffee. As another aside, the reds were from Victoria.

Another interesting side issue was the use of microwave band mobile. How is chatting on 10 GHz or 5.6 GHz whilst travelling the F3 towards Gloucester, some 100 metres apart? Some interesting flutter is the result when cars overtake one.

Thanks to Jack VK2TRF and Dave VK2CQ for a great week end. By the way, Dave VK2CQ selected the wine, but did not drink it!

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Test Patterns for ATV

Ross Pittard VK3CE

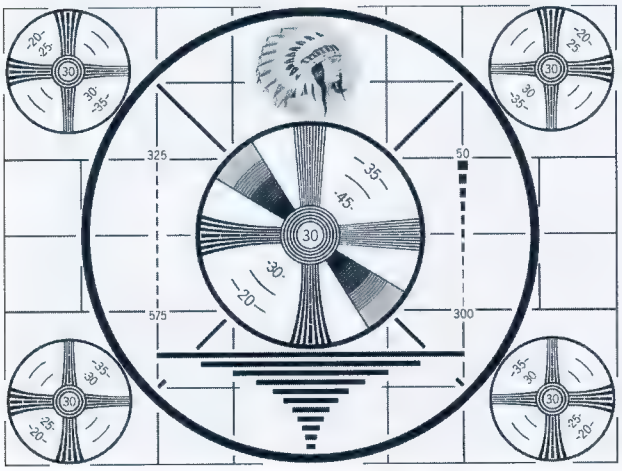


Photo 1: The well known RCA test pattern known as Indian Head card, more often used in the USA.

The general resurgence in ATV activity in Victoria with the 'digitising' of VK3RTV and the restoring of VK3RBO by Amateur Radio Victoria has seen many new operators trying out television for the first time. Usually one of the first questions asked by newcomers is what can I transmit? The answer to that is basically anything that does not infringe copyright; your home movies are a good example, as people get sick of looking at the same shot of you sitting in the shack.

With the advent of computers it is easy to create a simple video file using Windows Movie Maker which is included in the standard XP/Vista/Windows7 package. I find that even a simple scrolling slide show can be a useful diversion to play on ATV. Several of the slide shows I have created use some test cards interspersed with locally produced photos, these can be played directly from a video player which accepts AVI or MPEG files or alternatively try burning a continuous play DVD. On VK3RBO one of these files is played as the WIA News is broadcast on Sunday mornings.

The test card was a handy device used by TV installers and repair technicians to correctly tune in televisions, check convergence on colour TV's and picture geometry. It is also a useful tool for measuring reflections or ghosts on an analogue signal. Most repair techs now have to supply their own portable signal generators as with the advent of 24 hour television the humble test card is not often seen on your screen, but is still used for station internal testing and as an ident on news interchange links. For those with an interest in satellite TV many cards and station idents from around the world can be observed particularly on the AsiaSat series of satellites.

Photo 2: Test Card Maker (TCM) version of early ABC TV card.

Originally test cards were actual cards, which were then photographed by a camera and were used by the studio to check the geometry of both the camera being used and the monitors in the studio. A common card used was the EIA Resolution chart – refer Photo 6. The BBC have for years produced a series of test cards beginning with Test Card A which made its entrance in 1940. Test Card D was the first card to be produced to an engineering specification, in 1964. The current and probably most well-known of the BBC series of test cards is Test Card F – refer Photo 9, which made its debut in 1967 around the time of the introduction of colour television in the UK.

Photo 3: TCM version of Philips PM5544.

It was decided that the best way of testing the colour transmission at the time was to use a picture of a person as the skin tones are the hardest colouring to get right in television. The girl in test card F is Carole Hersee, daughter of George Hersee, who led the design team who came up with the card. It was originally a card but electronic versions of Test Card F have been in use for some years.

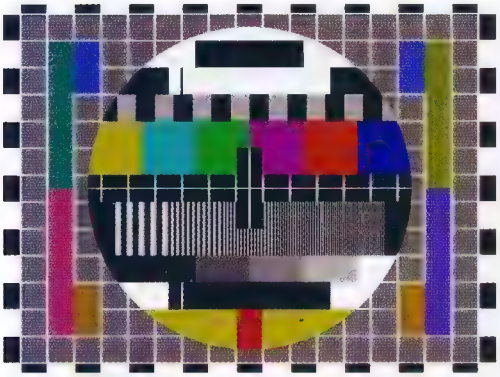


Photo 4: Philips PM5544 electronic test card.

Most modern test cards or patterns are electronically generated, using a special box of tricks that produces the correct video signal without the need for a camera. This is typically done by storing the desired image in graphics file either in non-volatile memory or on a CD ROM. This method ensures that the resulting signal is identical all the time.

Test Card F and the Philips PM5544 – refer Photo 4, are two of the most common test cards seen in our part of the world.

Over the years I have managed to collect a number of old pieces of broadcast test equipment including an Astor Pulse and Bar generator, surprisingly made in Australia, when we still had an electronic manufacturing industry. I also am fortunate to own a Philips PM5544 generator with Colour encoder, a Tektronix 148 test generator and a home built BATC electronic circle card. All of these are in full working order and are still useful in checking the performance of any TV link circuit whether in house or via an amateur TV repeater. This gear appears regularly at hamfests, for those interested in collecting equipment from the 'golden age' of television or as others sometimes call it, scrap metal.

For those who don't want to buy or build a test pattern generator a useful tool is a free software download off the internet called, surprisingly, Test Card Maker – refer (1).

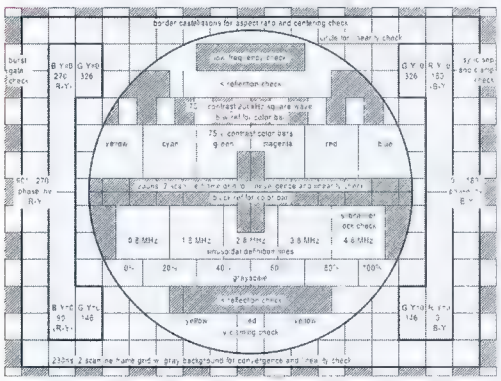


Photo 5: Description of PM5544 test card.

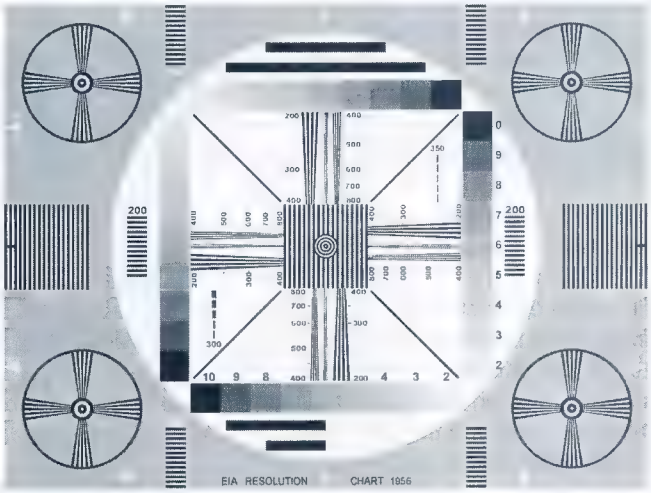


Photo 6: Standard EIA (Electronic Industry Association) resolution chart.

This handy utility makes generating a test pattern a very simple exercise and the results can be saved in either BMP or JPG format. It comes with a number of ready-made look a likes of the common Philips, BBC and Grundig electronic patterns. The user has the option of adding call sign details into the pattern to make a professional appearance. One must remember that while these patterns look the same as the broadcast generators they do not have the correct sinusoidal generators to produce the multiburst and pulse waveforms necessary for absolute testing of link performance.

Photo 7: TCM version of early Channel 7 card.

Other useful tools for checking TV links are both the waveform monitor and vectorscope. Many CRO manufacturers make both these instruments but Tektronix is possibly the most common brand found on the second hand market.

A waveform monitor is essentially a CRO set up for specific monitoring of the video waveform either as a line display or field display. They usually have the ability to select and look at one line of a video signal, useful when monitoring a full test pattern but wanting to check, say, the Pulse and Bar waveform only. A vectorscope has the ability to monitor the phase changes in the colour information being transmitted; in any colour TV system the phase relationship between the burst reference and the rest of the colour information results in a change of colour. This phase relationship must be kept as exact as possible, if not, people end up with different colour faces, not a desirable situation!

Increasingly in the digital age both these instruments are available as PC based instruments, both for the professional and hobby market.

Photo 8: My effort using TCM in 16:9 mode.

Many video editing packages for the home market include some form of both instruments. A plugin for Adobe Photoshop is available from (2).

There is no need to purchase software to utilise the PC as a waveform monitor or vectorscope. I have successfully tried a small utility package called Videoscope (3). With the addition of a USB capture device purchased on eBay for $15 this combination provides a useful monitoring setup for the ATV enthusiast. In the accompanying photos the line through the middle of the video image is a slider and indicates which line is being displayed on the monitor scope/ vectorscope.

This article, while not an exhaustive look at television may, I hope, encourage a few new amateurs into the interesting field of television. Unfortunately the uptake of interest in ATV is rather slow; it can be daunting to many amateurs not experienced in building their own gear. While it is not mandatory in the voice modes it is virtually compulsory in most ATV bands. There is a very good selection of kit modules to enable amateurs to get on the air with a minimum of fuss available from MiniKits (4) in South Australia. I am sure if contact is made with the many ATV groups around Australia there would be plenty of advice available with regards to kit construction.

If there is sufficient interest shown in kit construction I may be able to describe the assembly of some of the MiniKit modules.

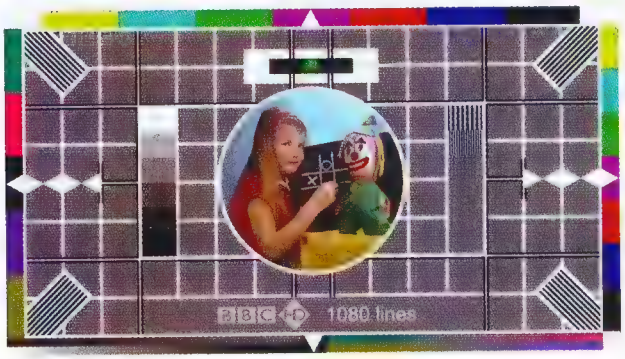


Photo 9: BBC test card F updated for wide screen TV.

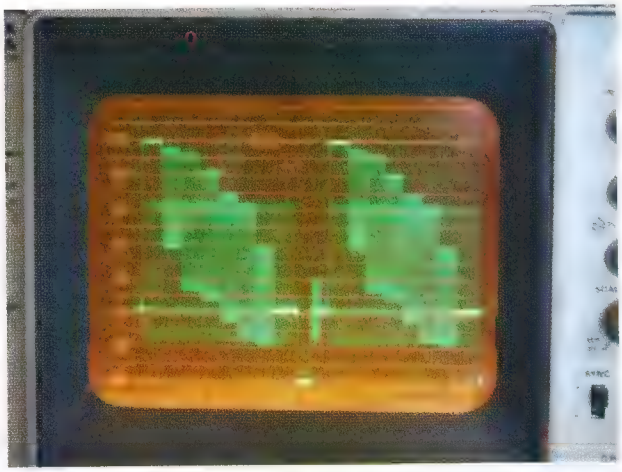


Photo 10: Colour bars on my Tektronix wave form monitor. (Chroma and luminance).

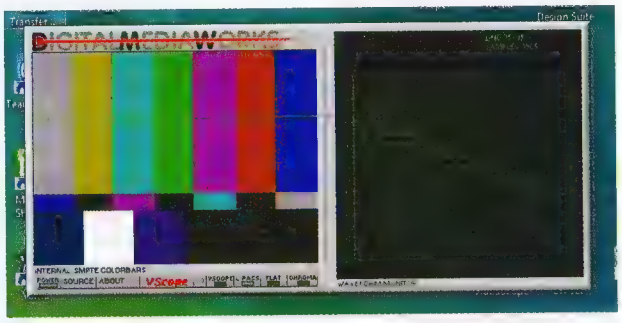


Photo 11: Colour bars on the Videoscope program. (Luminance component only).

Photo 12: Colour bars in the Vectorscope display mode.

References

(1) *http://www.oodletuz.fsnet.co.uk/soft/tcmaker.htm*
(2) *http://www.filecluster.com/Photo-Graphic/Miscellaneous/Download-Scopo-Gigio-CS5-AE.html*
(3) *http://www.softpile.com/Multimedia/Video/Download_04998_1.html*
(4) *http://www.minikits.com.au/*

VK5news Adelaide Hills Amateur Radio Society (AHARS)

Rob Gurr VK5RG
Publicity Officer

At the March 2012 meeting of AHARS Dean Probert VK5LB provided details and a display of the high power linear amplifier he had recently constructed. Dean discussed his motives for using the Super Cathode mode with his pair of 4CX250 valves, the sourcing of components, his research of articles by various authors, and its operating parameters as part of his amateur station. He displayed his well-kept records of progress with the success and failures highlighted.

An auction of donated equipment, and some from deceased estates was also held, providing much pleasure and entertainment to all attending. Some WW2 disposal items and 'boat anchors' provoked intense bidding.

Earlier in the month, some members of AHARS, the Historical Radio Society of Australia and the Australian National Antarctic Research Expeditions Club, were guests at the South Australian Museum where John Gillies presented his reconstruction of the Telefunken transmitter used by Sir Douglas Mawson in his 1911/12 expedition to Commonwealth Bay. The event was part of the Centenary celebrations of the first Australian Expedition to Antarctica.

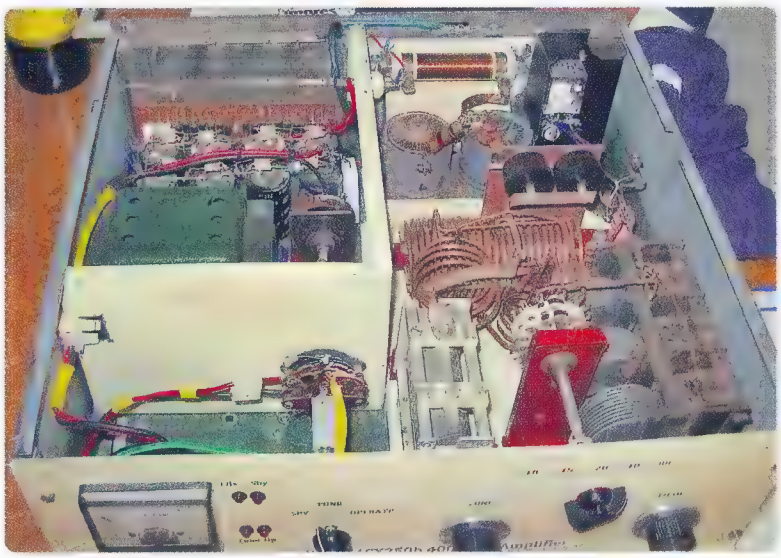
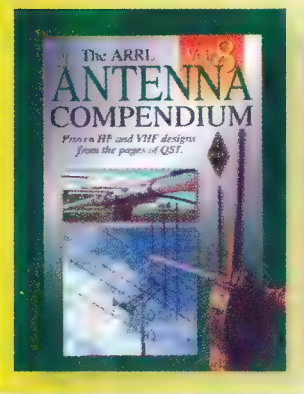


Photo 1: The VK5LB linear amplifier.

Photo 2: AHARS members view the reconstructed 1911 transmitter used by the Sir Douglas Mawson Antarctic Expedition.

Very little of this rebuild used original parts, most being manufactured from photographs displayed in 1910 catalogues. Rob Gurr VK5RG delighted the museum staff and John by donating an original insulator he had salvaged from the remains of Mawson's relay station at the top of Wireless Hill, at Macquarie Island, when he was there in 1952.



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Contests

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Contest Calendar for May 2012 – July 2012

May	**5**	**Harry Angel Sprint**	**CW/SSB**
	12	**VK/Trans-Tasman 80 metres Phone Contest**	**SSB**
	12/13	CQ-M International DX Contest	CW/SSB
	26/27	CQ WW WPX Contest	CW
June	2/3	IARU Region 1 Field Day	CW
	9	Asia / Pacific Sprint	SSB
	16/17	All Asia DX	CW
	23/24	ARRL Field Day	All
July	14/15	IARU HF World Championship	CW/SSB
	21/22	CQ Worldwide VHF Contest	All
	21	**VK/Trans-Tasman 80 and 160 metres Contest**	**CW/SSB/Digital**
	28/29	RSGB IOTA Contest	CW/SSB

Note: Always check contest dates prior to the contest as they are often subject to change.

Welcome to this month's Contest column.

Did you support the VK Team in BERU?

If you did, then it's more than I managed to do. Again. However, I *do* have a reasonable excuse. Pneumonia. Nothing to do with radio as such – no problems with antenna preparation for example – merely a failing of the human frailty. It was just as effective though, as I didn't get on the air at all.

After a few iterations, the 2012 VK BERU team finally emerged as VK6LW, VK4EMM, VK3TDX, VK2PN and Captain VK2BJ with VK4OQ as a standby substitute. Alan VK6BN was due to be part of the team, but as he had been trying to sell his house in a slow housing market, when an offer was made he jumped at it. Wishing to move to VK7, BERU weekend became a dash in a south easterly direction to find a new home. Hopefully, Alan found a place to call home and operate as VK7BO in the future.

The Kiwis paid tribute to Ron ZL1AMO, utilising Ron's callsign as the HQ station (instead of ZL6HQ) as an opportunity to remember him.

The Commonwealth BERU is an interesting contest. Since we don't work USA, JA or mainland EU there is a lot of QRX time waiting for openings to England, Canada and so on. Probably a good contest for us guys who like to sleep occasionally. Despite the solar storms experienced prior to the contest start, when things do open up to the British Isles it's a real flurry of activity and many are difficult copy. Quite a number of stations are low power with simple back yard dipoles only running a small number of contacts. One of the hassles is all the endless non-commonwealth DX that just want to keep calling in causing QRM. On CW it wastes time to explain what the contest is to non-contesters on the band so many operators just worked them and later removed the non-qualifying QSOs from their log.

Steve VK3TDX almost fell off his chair when he logged Laurie VK7ZE who was in there on CW as it is not Laurie's usual mode of choice. Nice going, Laurie! Steve logged 575 stations during his 11 hours on the bands for a claimed score of 5,260.

Patrick VK2PN spent some time getting his station into shape for the contest, with some work on his amplifier and some much needed antenna work. Murphy paid a call however, as Patrick's PC crashed during the first QSO, caused by a dodgy USB hub which had been in use for the last two years without incident. There's nothing like a contest to stretch the station and tease out any gremlins. With half an hour wasted walloping the hub with a hammer, Patrick was back on air and populating the log. Patrick made good use of 15 m, 20 m and 40 m using the openings to bolster his log. As well as other VK stations, Patrick found 10 m to be a bit of a loss during the contest, as it had raised expectations during previous weeks with spectacular openings to all around the globe. The contest produced 319 QSOs for Patrick, for a claimed score of 4,115 points.

Kevin VK6LW braved the scorching heat in Perth to tweak his antenna system prior to the contest. Kev found 10 m to be favourable to the UK and 15 m in similar shape. LF was also reasonable for Kev, as 80 m produced some good results. Kev reported that 10 m provided the best rate in the last hour of the contest with a decent opening to the UK again but signals were down compared to recent conditions. 702 QSOs got into the VK6LW log, for a claimed score of 6,970 points.

In VK4, John VK4EMM experienced some slow conditions but made good use of 40 m for some excellent SP and LP openings. HF seemed to be a challenge for John, with a 'run' being a struggle on 10, 15 and 20. 386 QSOs got John's log for a claimed score of 4,850 points.

Returning to BERU after a hiatus in 2011 due to relocating to VK, Brian VK3MI also participated in the contest. Usually operating from his native ZL, Brian used his Flex3000 SDR system in the midst of power line noise in suburban Melbourne with limited antennas by netting 108 QSOs for a claimed score of 1,525 points. Swapping knobs and buttons on the front of a rig, to a mouse and keyboard was quite a challenge!

Photo 1: Shows the general setup that the Lockyer Valley RC team used.

Ah well – maybe I'll play in BERU in 2013 if all goes well…

John Moyle Contest

As I write this section, it is the week following the John Moyle Contest. I spent the Moyle weekend trying to get ready for the WPX SSB contest the coming weekend. It would have been time better spent if I had taken the weekend to build an Ark instead. From the Friday evening until the Sunday afternoon, the station was either being festooned with rain, or Mother Nature was thinking about festooning with rain and sent low cloud instead until the rain clouds turned up. As a consequence of this blatant sexism, I got seriously soaked doing the preparation work. However, at least I could scamper away to the shack and seek solace in the relative sanctuary thereof. Not so the hardy souls who had set-up a portable station out in the sticks. I worked a few such souls during the contest – but only VK4 seemed to be affected by damp weather! Stations in VK2 and VK3 reported sitting in open tents, enjoying beautiful sunny weather! It rained so hard in VK4 that I had reports from EU on 20 m saying that my signal had a strange noise being transmitted with it. The rain was so loud on the roof of the shack that I gave up in the end and went to see how Mr Boag was doing instead. I hope that the John Moyle contest weekend went better for you than it did for me!

The aim of the contest is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore specifically designed to encourage field operation. The Lockyer Valley Radio Club suffered from rain, rain and more rain on the Saturday. A portable station was set up on Eagle Ridge, approximately 60 km from Brisbane and just outside the town of Laidley; they utilised a camper trailer, a large tarp and operated from a couple of two by one metre tables back to back (under large tarp) and one smaller one metre by 60 cm table (under the camper trailer annex).

Antennas were erected on the Friday afternoon by VK4QH, VK4SN, VK4MN and VK4FAKE and although they were only initially intending to set up some of them, a decision was made later in the day to get them all up. This would allow everyone a sleep in prior to the start of the contest or to spend the time refining the operation of the various antennas. With the 2 m antenna playing up, this was a wise move. Some tinkering from VK4BYX (bystanders always seemingly wiser!) saw a stub constructed which at least allowed its use the next day. All other antennas were assembled, erected and proved usable without a hitch. Antennas erected were an inverted V, an all (HF) band trapped vertical, a three element triband Yagi (20, 15 and 10 m), a six metre half wave vertical, a dual band vertical for 2 m/70 cm, a 12 element 2 m Yagi, and a 16 element 70 cm Yagi. Bands and modes operated included CW/Digital/SSB 80 m, 40 m and 20 m on one side of table 1; SSB/FM on 40 m, 20 m, 15 m, 10 m, 6 m, SSB/FM 2 m and 70 cm adjacent on table 2; SSB 80 m and 40 m on table 3. Band conditions were reportedly generally good except on VHF/UHF.

Photo 2: Peter VK4MN (foreground) and Ken VK4QH sitting back enjoying the sun. Or, given the weather, possibly not!

Unfortunately, initially heavy and then constant rain settled in from around 2-3 pm and stayed with little respite until well after midnight. The lighting arrangements we employed were a beacon for a multitude of insect life from what seemed like miles around. Not, amazingly, around the flood light set up to provide a constant load for the generator; too yellow, which is a point to be noted for the next similar operation.

Sleeping arrangements were crowded on the Saturday night as most (three out of four) decided to camp in the camper trailer annex due to wet and very muddy conditions. At some point in the night 4QH left the building citing 'intolerable noise'. The remaining occupants were unsure as to his meaning but appreciated his gesture none the less.

Early Sunday morning, the decision was made to pack up and make their exit before any additional rain trapped the contesters on the hill until the weather broke. Because of the early pack up time, the section entered was revised to six hour Multi-Multi which was probably only contested by a limited number of groups so the club may do OK even allowing for the reduced time. The team managed 335 contacts with the best bands 80, 40 and 20. Fifteen was dead making only one contact and four contacts were made on 10 m.

Patrick VK2PN was out with the VK2MB group.

They camped on a bush retreat of Jonathan VK2TAS near Mittagong in QF55ep. Since they had only batteries and solar panels available they ran out of power by the evening. Maybe they should have disconnected the fridge? Rain was not their biggest problem, but the lack of sun, being heavily overcast the whole Saturday, brought about an early demise no doubt. The team operated mainly 40 m with a few contacts on 80 m and 20 m, with three operators, while the rest of the crowd did the usual 'fun while camping' and lots of socializing, camp fire and one or two glasses of something splendid no doubt. There was not much 'fierce' contesting done but as a club they had a great time.

CQWPX SSB 2012

Did you get onto the bands for this one? As I write this part of this column, the sound of the contest is still ringing in my ears as it finished some four hours ago at the VK4KW station. Murphy paid a call with all manner of hardware calling it a day during the contest. It's a shame, as we had hoped to better the score from 2011 but it wasn't to be. We had our EU 40 m antenna die, so we lost a myriad of multipliers from EU as we could not work the band and had a logging PC lock up a few times. As always, it tends to find the most inconvenient moment to do this. We had an amplifier go bang. It took circuit breakers with it – so the lights went out. Such fun, seeing as it was in the night time! The team headcount was 'lean' this year, making life hard for operators as tiredness crept in from time to time. We had some fun anyway and tried a few new ideas in the heat of battle – many of which will be incorporated into the final station format. The bands were a bit weird. 10 m was sporadic, as was 15m, but 20 m wins the prize. We can usually run well on 20 m and we did so a few times at the weekend, but there were periods where I felt that I might have been on 40 m as EU stations were huge signals but seemingly couldn't hear OC stations calling them. We also got told that our SP and LP signals were the same strength! LP openings to EU/NA didn't seem to come to fruition as usual and seemed to be later in the day and then a little strange/annoying when they appeared as NA seemed to open to EU simultaneously so EU turned their beams elsewhere! The LP on 10 m was bizarre, as stations were worked over two poles whilst on the SP they were inaudible! Due to the points and multipliers structure we didn't bother with 160 m but 80 m was in good shape – but nobody there to work. The few that we got told us that we were a huge signal, which is gratifying given the antenna work, but if nobody is on the band then you're on a hiding to nothing.

Some of the EU prefixes were bizarrely long – one or two even had three numbers separating prefix letters from suffix letters. As, basically, we're all multipliers in this contest, it seems strange to intentionally go into the contest with an extremely long callsign. All in all, we're a much lower score than 2011. Still, there's always 2013!

Andy VK4NM had a ball however, as he and Peter VK4LAT doubled their score from 2011, with some help from newcomer Vlad VK2IM. The only hiccup was the little kink at the start with their modulation as it was reported that they sounded a bit like R2D2!

Steve VK3TDX had a frustrating weekend, as an intermittent in a Yagi trap caused a lot of down time trying to fix it without success. Steve found that propagation seemed quite good but didn't seem to follow recent trends.

Laurie VK7ZX/VK7ZE also had a frustrating time but for other reasons - it was hard to find somewhere to perch. At one stage when the US was open along with EU on the long path Laurie sat quite close to the US band edge. After a while he decided to find a clearer frequency up in the NA section of the band above 7.200. Laurie listened, sat for a brief period, no sounds, asked if the frequency was in use and there was no reply. He then trotted back down to the other frequency and let everyone know that he was QSYing and up he went. In the few brief seconds that it took, another VK station had found the frequency and was calling CQ! Laurie had the last laugh however, as he listened to all the stations calling him - I bet the other operator wondered what the heck was going on! Laurie ended up with 1,262 Qs on 40 m for a claimed score of just over 4.4 M points.

Craig VK2KDP teamed up with VK2FAJA, VK2FWRX and VK2MCI for the contest, but they had more than their fair share of problems with all manner of hardware and electrical supplies to the shack itself. With the log finally starting to be filled, a PC decided that logging was not a task it wished to participate in any further and the QSOs got swallowed into contesting oblivion, never to be found again. Overall with all the hiccups and problems, the guys finished with over 1.5 million more points than last year's score, so they ended up all happy. Biggest highlight came from new VK2FFG club member Peter VK2FWRX who, before this contest had never made a contest QSO or even made a HF contact. A baptism of fire indeed! 1,500 Qs in the log (finally!) for a claimed score of just over 3.5 M points.

Due to a lack of available operators, Steve VK6IR put the NCRG station to good use as a single operator entry, managing to keep his backside in the operating chair for 30 out of the 36 hours. Steve reported that 10 m and 15 m were very patchy and 20 m was fairly good. He had a great opening at 3 am on Sunday morning when, with not a sound on the band, he called CQ anyway and one hour later had 120 in the log! 40 m was its usual self with signals so strong but so much QRM and nowhere to call CQ.

ARRL CW 2012

Steve VK3TDX bagged 110 QSOs into the log for a claimed score of 21,780. 10 m seemed to have been the band of choice for Steve, but a great effort for two hours of operation. Vlad VK2IM was also active, but suffered from antenna issues on the LF bands. Vlad managed to snare 1,817 QSOs for a claimed score of just over 1 M points.

ARRL SSB 2012

Laurie VK7ZE reported 'below par' band conditions for the contest. 40 m was the exception however, so Laurie decided to concentrate there and see how it goes. 1,000 QSOs later, Laurie claimed a score of 441,000 for his efforts.

Steve VK3TDX was also active, capitalising on his 'Yank' accent on LP to NA on 20 m and producing some goodies for two hours on the Monday morning, allowing a total of 485 QSOs and a claimed score of 146,955 points.

Ken VK4QH snared just over 1,200 QSOs for a claimed score of 725,409 points. Ken's best tally was on 10 m but 80 m also produced the goods.

Chris VK3FY was mobile for the contest and worked the pile-ups on 40 m while in his car, whilst Catherine VK4GH logged 101 stations, but suffered from a dodgy antenna on Sunday evening which bought the fun to a halt.

The difference in propagation up and down the VK east side was interesting to observe. Steve VK3TDX never heard a peep on 10 metres except a few JAs calling and apparently neither did Laurie in VK7 while Ken's top QSO count was on ten. On the other hand southerly locations to VK3 seem to favour the long path route to the US. Also, on 80 Steve listened hard and really struggled to make only a couple QSO's with the superstations K3LR, W3LPL. Ken's success appears to show a propagation preference depending on latitude.

If you have any contest related material for inclusion within the column, topics that you'd like covered or even some experiences and pictures you'd like to share, then please feel free to get in touch via *vk4baa@wia.org.au* See you on the bands.

73 de VK4BAA Phil Smeaton

Winter VHF-UHF Field Day 2012

John Martin VK3KM - Contest Manager

"F" Call Challenge

The rules for this Field Day are unchanged from last time. But there is one extra feature: there will be an "F Call Challenge", with special certificates for Foundation licensees who participate in any of the single operator sections of the Field Day.

Dates: Saturday and Sunday 23 and 24 June 2012

Duration in all call areas other than VK6:	0200 UTC Saturday to 0200 UTC Sunday.
Duration in VK6 only:	0400 UTC Saturday to 0400 UTC Sunday.

Sections

A:	Portable station, single operator, 24 hours.
B:	Portable station, single operator, 8 hours.
C:	Portable station, multiple operator, 24 hours.
D:	Portable station, multiple operator, 8 hours.
E:	Home station, 24 hours.
F:	Rover station, 24 hours.

Operating periods: Stations entering the 8 hour sections may operate for more than 8 hours, and nominate which 8 hour period they wish to claim for scoring purposes.

Entering more than one section: If a portable station operates for more than 8 hours, it may enter both the 24 hour and 8 hour sections. If the winner of a 24 hour portable section has also entered the corresponding 8 hour section, his log will be excluded from the 8 hour section.

If a portable or rover station spends part of the contest period operating from his home station, he may also enter the home station section.

Two operators: If two operators set up a joint station with shared equipment, they may choose to enter Section A or B as separate stations under their own callsigns, or Section C or D under a single callsign. If they enter Section A or B, they may not claim contacts with each other.

Multi-operator stations: Portable stations with more than two operators must enter Section C or D. Operators of stations in Section C or D may not make contest exchanges using callsigns other than the club or group callsign.

Rover stations: The Rover section is for all portable or mobile stations that operate from more than two locator squares or change locator squares more than twice.

General Rules

One callsign per station. Operation may be from any location. A station is portable only if all of its equipment is transported to a place which is not the normal location of any amateur station. Portable stations may change location during

the Field Day provided the station is dismantled and reassembled each time it moves. You may work stations within your own locator square. Repeater, satellite and crossband contacts are not permitted

Except for CW, no contest operation is allowed below 50.150 MHz. Recognised DX calling frequencies must not be used for contest activity. Suggested procedure for SSB stations is to call on .150 on each band, and QSY up to make the contest exchange.

Contest Exchange

RS (or RST) reports, a serial number, and your four digit Maidenhead locator. The Maidenhead locator is optional if it has already been exchanged in a previous contact during the Field Day and neither station has moved since then.

Repeat Contacts

Stations may be worked again on each band after three hours. If either station is moved to a new location in a different locator square, repeat contacts may be made immediately. If the station moves back into the previous locator square, the three hour limit still applies to stations worked from that square.

Logs

Logs should cover the entire operating period and include the following for each contact: UTC time; frequency; station worked; serial numbers and locator numbers exchanged.

Scoring

For each band, score 10 points for each 4 digit locator square in which your station operates, plus 10 points for each locator square worked, plus 1 point per contact. Multiply the total by the band multiplier as follows:

6 m	2 m	70 cm	23 cm	Higher
x 1	x 3	x 5	x 8	x 10

Then total the scores for all bands.

Cover Sheet

The cover sheet should contain the names and callsigns of all operators; postal address; station location and Maidenhead locator; the section(s) entered; the scoring table; and a signed declaration that the contest manager's decision will be accepted as final.

Please use the following format for your scoring table. In this example on the table below, the operator has operated from one locator and worked four locators on each band.

A blank cover sheet, with scoring table, is available on the Field Day page of the WIA web site.

Entries

Paper logs may be posted to the Manager, VHF-UHF Field Day, PO Box 2042, Bayswater Vic 3153. Please email electronic logs to *vhfuhf@wia.org.au*. Acceptable log formats include: ASCII text, RTF, DOC, DOCX, XLS, XLSX, MDB, PDF, or any Open Document format. Logs must be received by **Monday, 9 July 2012**. Early logs would be appreciated.

FIELD DAY WEB SITE – http://www.wia.org.au/members/contests/vhfuhf/

This site includes the rules for the next Field Day, rules and results of all past VHF-UHF Field Days, cover sheets and scoring tables, and other information.

SPRING FIELD DAY UPDATE

An addition to the results for the 2011 Spring Field Day, John Elliott VK5EMI entered Section E with a score of 526 points, but his log vanished in cyberspace. His score has been added to the 2011 Field Days file on the WIA web site.

Band	**Locators Activated** (10 points each)	+	**Locators Worked** (10 points each)	+	**QSOs** (1 point each)	x	**Multiplier**	=	**Band Total**
6 m	10	+	40	+	40	x	1	=	90
2 m	10	+	40	+	30	x	3	=	240
70 cm	10	+	40	+	20	x	5	=	350
etc.									
Overall Total								=	680

WIA Contest Website

To keep up to date with all of the major Australian contests, including rules and results, at the WIA Contest Website at:

www.wia.org.au/members/contests/about

Silent Key

Brian Govier VK6ZD

At 15 Brian left the education system then tried numerous places for an apprenticeship but to no avail.

He scored a job delivering groceries around local villages and this is where his love of cycling arose and he later toured most of the UK on his bike.

The village is where he first became interested in radio as an old couple gave him a battery powered AM radio; there was no electricity at home in these days. The antenna was placed in a large oak tree in the backyard and an SWL was born.

After the war he gathered surplus second hand radio gear which was also set up for receiving.

Brian also spent 13 years working in the coal mines at Monkton No 5, his Dad also working there. Brian then headed to Australia with a mate, arriving in Darwin in 1962-1963. He initially worked on the wharf then with Qantas in the transport section. Brian met his wife to be Lynda there.

They then moved to Kwinana WA and when CB radio was introduced to Australia, this was a natural progression from a SWL. A chance meeting with another local CBer Phil (now VK6ADF) resulted in them becoming great mates until the end. Brian obtained his Novice licence VK6NCB, then VK6ZCU and finally VK6ZD in 1978-79. Brian recently recalled how his first ever contact over amateur radio was with Glen VK6IQ. A contact he always remembered.

Brian excelled in CW and ventured into ATV and SSTV with the home made components he created, with encouragement from Pat VK6PH. He also had many long distance ATV contacts on 70 cm with Peter VK6ZPG, which he was very pleased with.

RTTY was very big around then with the big Siemens Type 15 teleprinter clattering away while he built various items in his shack.

Brian's computers in the shack were often monitoring for earthquakes with homebrew devices he made. Amongst his other passions were VLF beacon reception and monitoring planes via an ADS -B virtual radar receiver which was often running in the background.

In latter days and up until he passed away, Brian was interested in SDR technology and spent many hours listening on his beloved SDR-IQ. He later received a fun cube dongle from Phil who had a spare, surplus to needs. This later ended up with his friend Joe OE6GG, whom Brian befriended and exchanged many emails.

Right up to being confined to his bed he would run WSPR on 30 m and 10 m for hours.

Brian and Lynda would travel to Queensland to visit their daughter and much loved grandkids a couple of times a year, a place he loved to visit.

Brian was a wealth of information and always willing to help anybody. Both Phil and I knew the family since the early 70s.

Brian wrote his memoirs with help from Phil prior to being confined to his bed after a very short illness, some of which were read out during the funeral service.

Brian is survived by his wife Lynda, son Nick and daughter Larissa.

Prepared by Gavin VK6VKS with the assistance of Phil VK6ADF.

Silent Key

Ken Seymour VK6YFE

Ken Seymour VK6YFE passed away recently at 85 years of age. A quiet man who joined NCRG in the nineties after a long association with the CB fraternity, he passed away at his home in Ocean Reef.

Contributed by Wayne Johnson VK6EH.

A little known pioneer of Australian wireless

Brian Kirkby e *bdkirkby@bigpond.com*

Photo 1: Edward Hope Kirkby.

At the one hundredth anniversary of the establishment of the WIA it is timely to reflect on the history in the field of wireless telegraphy with the story of one little known pioneer and his contribution. I speak of Edward Hope Kirkby (1853-1915), pioneer of Australian wireless, X-ray and systems of fire protection – inventor and philanthropist.

Edward was one of the first exponents and practitioners in Australia of the use of wireless telegraphy. He was a leading operator and inventor, advisor to George Taylor and mentor to Archibald Shaw. He was experimenting with wireless telegraphy from before 1901 back to its very first appearance in Australia in 1896 when he began experimenting with X-ray. What follows is the story of his life and his involvement with Taylor and Shaw.

Edward Hope Kirkby was born on the ship Hope off Cape Leeuwin, WA. His family settled in Bendigo, Victoria. It was here he was educated and became a jeweller watchmaker. He married and moved to Williamstown where he set up his business. While there he branched out into the field of electrical engineering, inventing and building systems of fire protection, and started experimenting with X-ray and wireless.

He was described in the Williamstown Chronicle of September 1901 as: *'this gentleman, as is well known, is a scientific enthusiast, chiefly devoting his leisure to electrical experiment, and is noted in Melbournian circles of that particular cult as a first front exponent in electrical engineering. Like the majority of deep-thinking scientists he is of a most unassuming disposition, but his repertoire of scientific knowledge has been proven to be of a highly extensive character. Nothing appears to come amiss to him in this line, whether it be displaying the X-rays, manipulating a gramophone or the limelight apparatus, or even in the higher flights of wireless telegraphy.'* This is the first reference to his interest in wireless telegraphy.

In November, 1896 the Chronicle wrote of his X-ray experiments at Williamstown Hospital. Remarkable when you consider in the same year news of Roentgen's discovery had only reached the colony in February, the first Crookes tube evacuated and first X-ray taken in March. Marconi patented his wireless discoveries in 1896. In 1905 the government took control of wireless and Kirkby was interviewed by the Age newspaper as an expert on wireless telegraphy; the paper did not believe the Post Master General's Department representatives could enlighten them.

Kirkby's business was the invention, design and construction of systems of fire protection. He is recognised by the Fire Protection Association of Australia (FPAA) in the book *'Fire – A Century of Automatic Sprinkler Protection in Australia and New Zealand'* by Harry Marryatt for his contribution, having in 1909 invented the sprinkler alarm that extended an alarm to Brigade Headquarters when a sprinkler was activated in the event of a fire. In fact he made the full system of alarms as we know them today. These systems of street fire alarms included the full telephony and switchboards required for communication between brigades and premises. His hobby and interest was in the field of wireless telegraphy.

In 1907 he moved to Sydney to further his business, leaving his wife behind in Melbourne caring for her ill mother. Kirkby had an interest in horse racing and became the honorary timekeeper for the AJC

at Randwick racecourse where he designed and constructed the automatic clock for timing the races. It was here that he met and became friends with Father Archibald Shaw, the catholic priest of the Order of the Missionaries of the Sacred Heart. Shaw was the assistant procure at the Order's house 'Ascot' in Dutruc Street, Randwick. The procure provided logistical support to the Order's missions in the Pacific and a place of rest for missionaries returning from service. Kirkby had had a falling out with Wormald Bros, his agents, who manufactured and installed his equipment in conjunction with Grinnell Sprinklers to give Australia one of the world's most advanced system of fire protection. Kirkby needed premises to manufacture his systems. Father Guis, who was Shaw's superior at the procure, in a letter to his superiors described how the works came about:

Kirkby approached Shaw to build a factory on the procure's land. Shaw and Guis refused and said they would build the factory and let it to Kirkby for £2.0.0 a week. Once the workshop was built, Kirkby established himself with all his own tools and machinery for production, together with his two sons and some other workers, and he set about making his inventions: instruments of electric fire alarms. Kirkby was still interested in dabbling in his hobbies of wireless telegraphy and X-ray. Kirkby moved into the procure where in the evenings he taught Shaw all about wireless telegraphy and they experimented together, as Guis describes it, as for the love of science. The Order of the Missionaries of the Sacred Heart at Randwick were always in debt and Shaw saw an opportunity to make money manufacturing wireless apparatus. He approached Kirkby as he had no knowledge or experience. Kirkby agreed to do this and gave all the profit from wireless to Shaw. The business became very successful and they formed a company, the 'Maritime Wireless Telegraph Company of Australasia Ltd.'

In 1910 George Taylor was a frequent visitor to the wireless works and was rallying support to ready for the coming war. He was a lieutenant in the militia and organised a demonstration of wireless at the Easter camp at Heathcote, NSW for his superior officers. For the experiments he enlisted the aid of three civilians, Messer's Hannam, Wilkinson and Kirkby. Taylor describes it as thus: *'The military were not provided with any wireless apparatus and just as in the frenzied rush of war preparations on the day the troops went forth, a collection of sundry apparatus and the services of three experts were rapidly requisitioned into a train going southwards, and reached the camp at Heathcote on the day the troops arrived. It was a sorry looking collection that I had dumped on Heathcote platform. Two great railway baskets loaded with glass jars, insulators, wires, coils, and other paraphernalia, some new, mostly old. 'Looks like a raid on a second hand shop,' an officer facetiously remarked. 'So you're going to try and get wireless messages through with those toys,' said another with a sly wink. 'Ah, well, keep it going till my little girl comes up; she'll be amused' – a comment which provoked a roar at the mess table. The movement was not taken very seriously; the chances of success were not many. Not only were the instruments of one operator unknown to the others, but the operators themselves met for the first time, and though they were optimistic, yet they thought there was just a chance. They were good fellows, they buckled into the work, although one was a sick man, only coming out at my most earnest solicitation'.* The sick man was Kirkby who had to leave before the demonstration was successfully concluded and according to Taylor's account: *'We had succeeded in establishing the first military wireless stations in Australasia, and the first officially recorded stations on the continent to receive intelligible wireless signals, and for that success every credit must be given to the ardent enthusiasm of Messrs. Kirkby, Wilkinson, and Hannam'.*

Photo 2: Making street fire alarms.

Taylor continued: *'It proved in a marked degree, however, the ease with which wireless communication could be established between stations once the definite spacing of the spark gap and tuning is understood. It also demonstrated the difficulty that an outsider would experience in endeavouring to tap wireless messages. He would not only have to continually change his tuning to try to key with the wave lengths, and that is a matter of patience and good luck, but when he could receive indications he would probably find the messages in cypher. His piracy would be made a still more difficult task, and he would be driven to the darkest depths of despair, if he found that regular alterations of tuning were understood between the operators. Till today wireless telegraphy has been expensive on account of the cost of patent rights attached to available apparatus. Today the track is blazed by which experimenters can improve on earlier methods, so that tomorrow wireless will be a matter of economical utility'.*

Later in 1910 Taylor gave a lecture 'The Air age and its military significance'; this lecture also included the use, and a demonstration of, wireless telegraphy. The wireless apparatus was made, and operated, by Kirkby who had demonstrated it earlier that day to Alexander Graham Bell on his visit to Australia. Taylor always used Kirkby for his demonstrations, he never used Shaw. Taylor knew who the expert was.

At the works Shaw saw an opportunity to promote the use of wireless, offering the government portable wireless sets with motor generators all built at the factory by Kirkby to search for Staniforth Smith, the administrator lost in New Guinea. Newspaper photos of the day show Kirkby with Shaw and others who were volunteering to go to New Guinea to join the search, at the foot of the tower built for their antennas. Kirkby is described in the photo as the well-known radio inventor and operator.

In 1911 Kirkby moved out of the procure and sold the business to Shaw and his backers who formed a new company The Maritime Wireless Company (Shaw System) Limited in September, 1911. The memorandum and articles of Association state: *'To acquire and take over as a going concern the laboratory workshops wireless apparatus plant fixtures machinery tools materials and effects at present on certain land at Avoca Street, Randwick and the benefit of certain applications for Australia provisional Protection for improvements in Wireless Telegraph apparatus'.*

On 3rd July, 1911 Shaw applied for the following patents:

- IP Australia – Australian Official Journal of Patents
- 1911 No 1683 Improvements in spark gap apparatus for high frequency radio-telegraph transmitters
- 1911 No 1684 Improvements in radio-telegraph apparatus
- 1911 No 1685 Improvements in radio-telegraph receivers

If we consider the results of the demonstrations at Heathcote, Taylor said *'once the definite spacing of the spark gap and tuning is understood."* And we consider that the new company took over *'the benefit of certain applications for Australia provisional Protection for improvements in Wireless Telegraph apparatus'* and Shaw's patent applications. Given the evidence of Kirkby setting up the company, building all the wireless sets and always helping Taylor with wireless demonstrations we could well ask the question, what did Shaw do? Guis describes Shaw as the front man for the company, required for his brain and name. Taylor never used him for his brain. This leads me to the conclusion that in fact Kirkby was the inventor and experimenter with wireless. He gave his wireless to Shaw. Philanthropy was not new to Kirkby. The Williamstown Chronicle in 1901 wrote of Kirkby when the townspeople presented him with an illuminated address and purse of sovereigns: *'He had spent the best portion of his life in Williamstown, and during that period had on many occasions given his talented services in the cause of charity and benevolent objects. Williamstown in losing Mr. Kirkby was losing a good man - one of the best. It was a pity to let him go without presenting him with some slight memento of their appreciation of his valuable services, which were ever at the disposal of the community. As a scientist his name had come prominently before his fellow townsmen, while no one could hold up their little finger in contradiction of Mr. Kirkby's unswerving business integrity. A gentleman of their friend's ability, had he so chosen, could possibly have left the town a wealthier man. Instead, however, he has left a name behind him, the memory of which would last to the end with those who knew him best.'*

Kirkby moved to the city in 1912 to continue his design of fire protection systems and X-ray apparatus manufactured by the Shaw wireless works. He dropped dead of a heart attack on 28th August, 1915 at his place of business in George Street, Sydney the day after he buried his wife. They are buried together at Waverley Cemetery in Sydney.

Later the works were contracted by the government to build the coastal wireless service stations around Australia by John Graeme Balsillie of the Postmaster Generals Department after the failure of German interests to perform to the satisfaction of the Government. Telefunken was built in Sydney and Perth. The works proved a valuable acquisition as a manufacturing facility for armaments during the war as importing goods from England was very difficult in the circumstances.

Later controversy surrounded the works. Controversy over litigation for patent infringement – what was the true story? What about the Attorney General who

acted for Marconi? The controversy of the Royal Commission - if it was not about the Shaw Wireless Works, what was it really about? Perhaps it was about the pay clerk who embezzled £70,000. They always say follow the money trail. How was Sir Hugh Denison involved? No criminal charges were ever laid and Father Shaw had been dead for two years with no one to defend him. The site of the works remained in Defence hands for another 90 odd years.

On Edward Hope Kirkby's death in 1915 he had no riches; he never even owned his own house. He had books and tools and a small amount of cash. So after all he had achieved in life there was nothing to show, nought. No recognition of his inventive genius as Australia's first fire protection engineer, a pioneer of X-ray experiments and the introduction of wireless: A philanthropist who sought no reward other than the lure of invention.

'The lure of invention is one that influences all people and spares no class or condition of men. From the clergyman in his study to the convict in his lonely cell (says the 'Scientific American'), it exerts its attraction, and both are found enrolled among the list of patentees, although not so precisely identified. The stimulus is not always the hope of fee or reward, for we find the millionaire as strongly interested as the very poor. There is something in the attraction that cannot be resisted. Someone has said that writing is like flirting. If you cannot do it, no one can teach you to do it, and if you can do it no one can keep you from doing it. So it is with invention; no one can teach you to do it, and if you have the divine afflatus no one can prevent you from exercising it. This is fortunate, for the inventor is subjected many times to discouraging influences in the first instance. Have you ever noticed, however, the pride with which anyone will display an invention even of the simplest character. Surely this is commendable for we all admire originality, and invention is originality, often of the highest order. While the lure may be regarded apart from the results, we cannot help realising what a poor world this would be except for the beneficent works of the inventors of all times.'

From a newspaper cutting (origin unknown) in the Kirkby scrapbook.

Some References

1. 'By Wireless' How we got the signals through - George A Taylor Lieut Army Intelligence Corps.
2. The Air Age and its Military Significance - George A Taylor Lieut Army Intelligence Corps.
3. Some Chapters in the Life of George Augustine Taylor – A Biography. J M Giles – supplement to Building Lighting Engineering 24/11/57 SLNSW – N920 T241.9.
4. Fire – A Century of Automatic Sprinkler Protection in Australia and New Zealand 1896-1986 Harry W Marryatt.
5. Articles in the Williamstown Chronicle 1896-1901.
6. Article in The Age 1905.
7. A letter from Father Guis to Father Field - Some notes on the 'Wireless' at Ascot – 7/5/1911.
8. Archives of the Missionaries of the Sacred Heart, Roma Ave, Kensington NSW.

Plan ahead

23 - 25 June

Winter VHF-UHF Field Day

The Winter VHF-UHF Field Day will be held over the weekend of June 23/24. For full details please refer to the contest web page:

http://www.wia.org.au/members/contests/vhfuhf/

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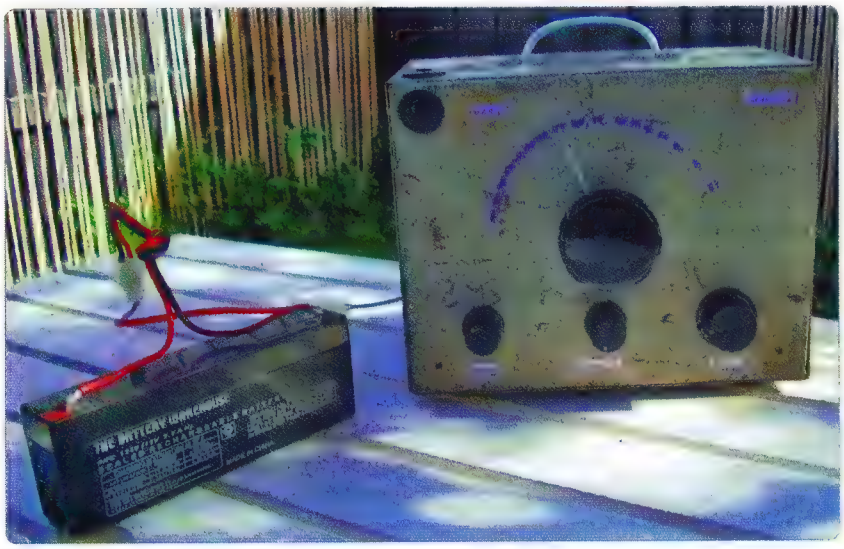

Photo 1: The front of the receiver.

Introduction

Described is a receiver that shows that valves do not always need high voltages to operate. It should appeal to the builder who always wanted to build a valve project but did not have the high voltage components or power supplies normally required.

The set tunes from 500 kHz to 1.9 MHz, or wavelengths between 600 and 160 metres. This covers not only the AM broadcast band but VK3XU's AX2VKW test beacon on 507 kHz and 160 metre amateur SSB/AM/CW activity above 1.8 MHz. HF bands can also be added, though performance seems to fall off.

The prototype was built after reading a review of a low voltage valve receiver sold as a kit (Reference 1). The reviewer was critical of the circuit's design but made modifications which greatly improved reception. This article describes my version of it, which performs as well as any conventional high-voltage regenerative set.

Low voltage operation

Unlike transistorised appliances, virtually all valve radio equipment required multiple power supplies. At a minimum this involves a six or twelve volt AC or DC supply for the valve filaments (low tension) and a 200 to 400 volt DC supply for the valve's plate (high tension).

There was normally a mains power tranformer with low and high voltage windings to supply these voltages. Most valve receivers were intended for home use. Portable valve equipment often used specialised battery valves, but by about 1965 lighter transistorised equipment had become more popular.

Valves still perform well today, but the need for a suitable dual-voltage power supply and specialised often salvaged high-voltage components make construction harder. The shock risks of poorly built equipment might also deter some.

This receiver is unusual because it avoids these problems. Instead of being several hundred volts, the high tension is just twelve volts. The filament is also twelve volts, allowing use of a single supply (which could be a battery) for both. Only low voltage parts are needed. Hence it is simpler and safer to build than conventional valve equipment.

Photo 2: The chassis front.

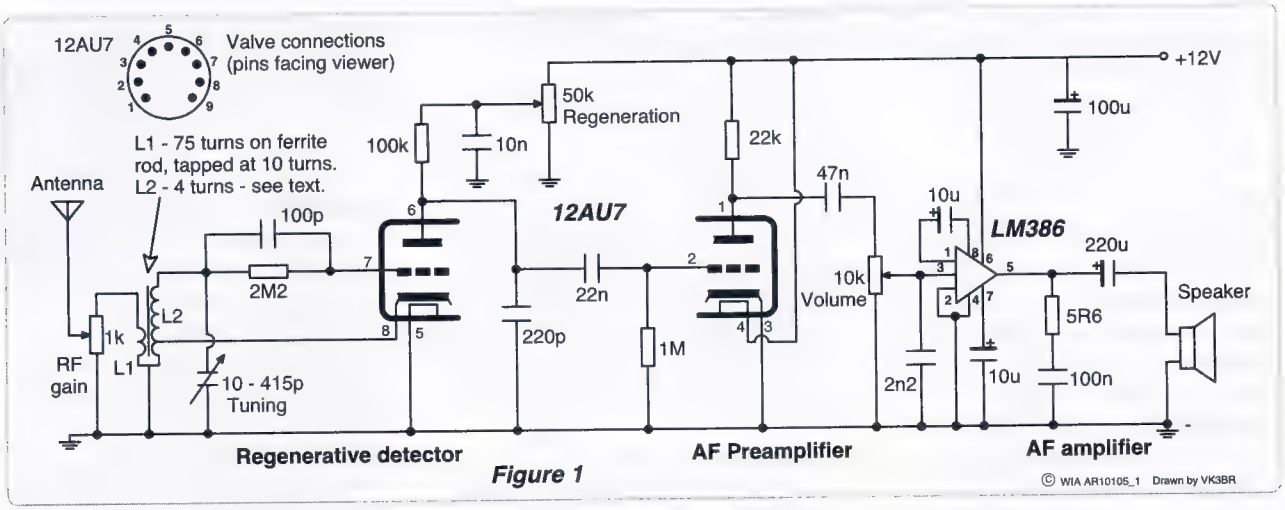

Figure 1: The circuit diagram

Circuit description and obtaining parts

The circuit is conventional apart from its low voltage operation. It uses a 12AU7 dual triode, which was common in 1960s TV sets and audio equipment. One half of the valve is the regenerative detector while the other half is the audio preamplifier. The use of adjustable positive feedback (regeneration) provides extra gain and is the key to the receiver hearing weak signals. The regeneration control is a bit like a radio's volume control except the volume increases suddenly and peaks near a certain point of its rotation. Beyond that point the receiver oscillates (useful for amateur SSB and Morse reception) but the volume does not increase further.

The 12AT7 and 12AX7 valves have similar pinouts but slightly different characteristics to the 12AU7. The 12AT7 worked almost as well as the 12AU7 but had slightly weaker regeneration. In the prototype a 12AX7 could not reliably be brought into oscillation across all parts of the broadcast band so is less preferred. However experimenting with the coil tap's position should make it usable.

The output from the valve will directly drive high-impedance headphones, or if you do not have any, a speaker transformer and low impedance phones. To drive a speaker, even on weak signals, a small IC amplifier was added.

Like the later small valve receivers, this set uses a ferrite rod as salvaged, or from Jaycar. This allows use without an external antenna if the cabinet is non-metal. The variable capacitor in the prototype was a 10-415 pF unit from an old valve receiver. A more modern plastic 10-160 pF unit, also from Jaycar, will also work but you may need to wind a few more turns on the coil and accept slightly less tuning range.

The inclusion of a vernier reduction drive is what makes the receiver a pleasure to use, especially at night when tuning interstate broadcast stations or SSB activity on 160 metres. These are hard to obtain locally, but Jackson Bros (an *AR* advertiser) may be able to help. Alternatively use a salvaged radio dial drum and cord to achieve finer tuning. If neither appeals, just use the biggest knob you can find and glue an old CD or DVD to its skirt to form a large, easily calibrated 'handspan' dial.

The chassis can be either a bought case or bent from aluminium sheet. The latter is expensive from electronic suppliers but metal suppliers may have it for less.

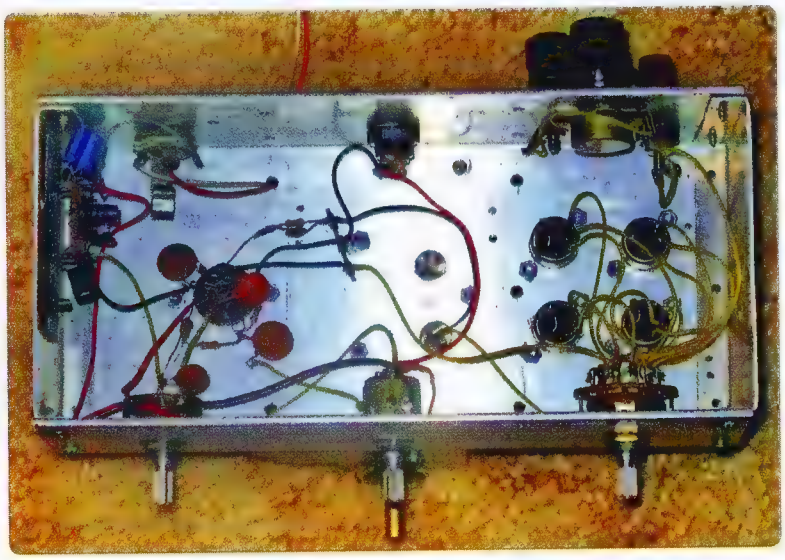

Photo 3: Under the chassis.

A loaf tin or baking tray (preferably obtained second-hand) is a good substitute for those wishing to economise further.

All other components are standard low voltage parts obtainable from the regular suppliers or from old electronic equipment.

Construction

This receiver was built using conventional valve techniques including a metal chassis and cabinet. Larger components such as the valve and socket, tuning capacitor and ferrite coil are mounted above the chassis while the other parts are wired point to point underneath. Screw-mounted tag strips support components under the chassis where needed. The IC audio amplifier was built on a small piece of matrix board approximately three by four cm. The widely available 'Champ' kit is a good substitute for those not wishing to build from scratch.

The coil is wound with enamelled copper wire, such as can be found inside tranformers. The gauge is not that critical but if purchasing select a thickness of around 0.7 mm. Hold the wire firmly and wind each turn next to the previous one. To make the tap, pull the wire about 10 mm above the rod, form into a hairpin shape, twist with a pair of pliers and resume winding. Scrape away the enamel insulation at both ends and the tap. Anchor the wires at either end with insulation tape, noting there may be a need to add or remove turns later for best frequency coverage. Stations near 900 kHz should be near the dial's half way point. The main coil in the prototype has 75 close-wound turns, with the tap 10 turns up from the earth. The antenna winding, which is further up the ferrite rod, has four turns.

Construction is not critical provided leads are kept fairly short. You could even make a printed circuit board but for the few components involved it hardly seems worth it. Always use a socket and do not solder directly to valve pins.

Double-check connections before applying power – in particular 12 volts applied to Pin 9 (which should be left unconnected) will blow the filament. Use a metal front panel and build the set solidly for good frequency stability. If desired allow room for a band switch (at least three pole, two position) to experiment with coils for HF or LF bands.

Testing and use

The IC audio amplifier can be tested by placing a finger on its input. A click or buzz should be heard from the speaker.

The best way to test the receiver portion is whether it goes into oscillation when the regeneration control is advanced. You can tell that this is happening by a gentle hiss coming from the receiver and maybe a squeal at full regeneration. Oscillation starts at lesser settings of the control at the higher frequency end of the band and higher settings at lower frequencies.

Try to tune in stations, with an external antenna connected if in a weak signal area. Tuning needs two hands. The regeneration control should be kept just before the point of oscillation as the tuning knob is adjusted. SSB and CW signals, as found near 1.8 MHz, is done with the set lightly oscillating.

A calibrated dial is a nice finishing touch once satisfied with the receiver's coverage. Calibration can be done with the help of stations on known frequencies or by monitoring the lightly oscillating receiver on nearby calibrated equipment, for example, an HF transceiver set to SSB. For this to work a wire from the latter's antenna socket needs to be brought close as the receiver's oscillator is quite weak.

Set the calibrated receiver to various frequency points, for example, to 500, 550, 600 kHz and so on, and tune the regenerative set, which will need to be oscillating, until its oscillator is picked up on the calibrated receiver. Write each frequency on the rim of the tuning knob on the front panel near the tuning mechanism's pointer. Repeat for the rest of the band, every 50 or 100 kHz as space permits. Frequencies can be written on small paper labels affixed to either the front panel or tuning dial.

When used with a large speaker the set provides quality reception of local stations. Interstate broadcasters and 160 metre amateur activity are audible at night. When on air, the 507 kHz AX2VKW experimental beacon, about 50 km away, comes in at excellent strength.

Because it has only one tuned circuit, the greatest reception challenge is when receiving weak signals near strong local stations that can spread across part of the dial. Careful juggling of the RF gain, regeneration and tuning controls can sometimes allow signals to be heard. Alternatively some extra front-end selectivity, such as a preselector, bandpass antenna coupling unit or tuned receiving loop can greatly improve reception.

Conclusion

A receiver that delivers excellent performance on the AM broadcast band and adjacent frequencies has been described. By using 12 volts exclusively it avoids shock hazards, the need for large power supplies and the use of specialised high voltage components. As a result it is an excellent project for both the beginner and curious experienced builder.

References

1. Cool386 website: *www.cool386.tripod.com*
2. Demonstration of this receiver: *www.youtube.com/vk3ye*

Review: **Wireless - from Marconi's Black-Box to the Audion**

Reviewed by: Blair Bowler VK4BBX e *vk4bbx@wia.org.au*

A new look at the early history of wireless communication

While looking through the new release books at my University, I came upon the book titled: Wireless. Such an excellent research book on the history of technology needs to be shared. How best to do this, I believe, is to review the publication for Amateur Radio magazine. Those who read this magazine would appreciate and enjoy Wireless.

Fifteen years after Guglielmo Marconi's invention, wireless became the essential means of communication, and a hobby for many. The author of Wireless, Sungook Hong, offers a new perspective on the very early days of wireless communication. Drawing on previously untapped archival evidence, and historical investigation, he examines the substance of experimental and theoretical aspects of engineering and scientific practices during the early first years of this technology.

The author describes new insights into the relationship between Marconi and his scientific adviser, the physicist John Ambrose Fleming. He reveals a rare case-study of how the credibility of an engineer can be created, consumed, and suddenly destroyed. The book concludes with a discussion about the transitional shift from wireless telegraphy to radio.

This appropriately titled 250 page book will satisfy the technical and historical appetite of any amateur radio enthusiast or professional. It is a truly exciting publication packed with schematic circuits, drawings and pictures, many of which are clearly signed and witnessed by the original inventors. This academic work is well researched, and presented. The final notes, wonderful bibliography and useful index, alone, contains a wealth of data. Wireless has the distinctive qualities necessary for it to become a benchmark textbook for the historical studies of telegraphy and radio.

Contents

Chapter: (1) Hertzian Optics and Wireless Telegraphy. (2) Inventing the Invention of Wireless Telegraphy: Marconi versus Lodge. (3) Grafting Power Technology onto Wireless Telegraphy: Marconi and Fleming on Transatlantic Signalling. (4) Tuning, Jamming, and the Maskelyne Affair. (5) Transforming an Effect into an Artifact: The Thermionic Valve. (6) The Audion and the Continuous Wave. Epilogue: The Making of the Radio Age. Appendix: Electron Theory and the 'Good Earth' in Wireless Telegraphy.

Wireless - from Marconi's Black-Box to the Audion. PB, March 2010. ISBN: 978-0-262-51419-4 - The MIT Press, Massachusetts Institute of Technology, Cambridge, Massachusetts. 02142. USA.

The author Sungook Hong is Associate Professor at the Institute for the History and Philosophy of Science and Technology at the University of Toronto.

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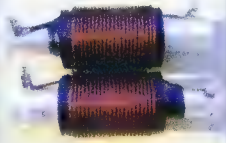

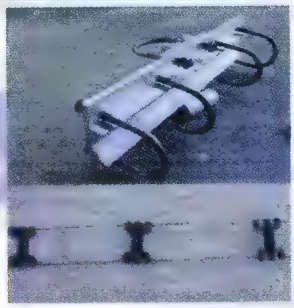

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ALARA

Margaret Blight VK3FMAB – Publicity Officer

The year is moving along at a rapid pace and memories of summer are fading fast. Various radio clubs have been busy organizing their annual ham sale days. The EMDRC held their White Elephant Sale on Sunday 25 March and it was very well attended. ALARA was represented both in the kitchen and at the ALARA table.

Photo 1: Micheline VK3FMEG, Dianne VK3FDIZ, Margaret VK3FMAB and Jean VK3VIP.

Also in March representatives from ALARA travelled to New Zealand to take part in the 50th anniversary celebrations of WARO. As votes for women first occurred in New Zealand, so too did the first YL organization in the southern hemisphere originate in that country.

Tina Clogg VK5TMC, President of ALARA and YL International 2012 Organizer attended the celebration in company with several other YLs from South Australia. They were joined by Jean VK3VIP and her OM from Victoria and Catherine VK4GM and her OM from Queensland.

WARO – the beginning

In June 1961, Thelma Souper ZL2JO attended her first NZART conference in Hamilton, NZ. She heard there were some newly licensed YLs also present and was keen to meet them. Subsequently this became the first YL meeting when Thelma and four other YLs met up. They decided it was time to encourage other women to participate in what was then an overwhelmingly male-dominated hobby and to form a YL club for mutual support.

Setting up the 80 metre YL net

It was further decided at that meeting to establish a monthly 80 metre net. The first net took place on Tuesday 11 July, 1961. Eight YL operators checked in, including the five who had met up in Hamilton. A letter had been sent to all known YL amateurs inviting them to join in the net. Thus began the regular YL nets that have continued to this day.

The inaugural meeting of WARO

The next step was to form a club and a meeting was held in Brent's Hotel in Rotorua on 10 March, 1962. Seven YLs were present and interest and support was expressed by others unable to attend. After much discussion the name of the group became NZ **Women Amateur Radio Operators**.

A set of rules was drawn up with the object of the group being 'To promote and encourage interest in radio amongst women radio operators.'

WARO – the 50th anniversary visit

Our New Zealand trip notes were contributed by Christine VK5CTY and Tina VK5TMC.

On 9th March five VK5s arrived in Auckland at the start of a couple of weeks in New Zealand. The main purpose of the visit was to help WARO celebrate its 50th anniversary. Tina VK5TMC, Jenny VK5FJAY and Christine VK5CTY and two OMs Robert VK5ZHW and Kevin VK5AKZ were joined by Jean VK3VIP and her OM John VK3DQ, from VK3, and Catherine VK4GM and her OM John VK4IO, on Saturday when we met the WARO YLs and their OMs at the Millennium Hotel in Rotorua.

This hotel is the actual place where WARO was formed exactly 50 years to the date of the celebration this year. The only YL present this year who was also present in 1962 was Celia ZL1ALK, but two others had been members of WARO for 40 years and two for 30 years, all of whom were presented with certificates and flowers. Biny ZL2AZY was also presented with a certificate acknowledging her success in the Thelma Souper Contest in this auspicious 50th year.

The formalities were managed very efficiently by Margaret ZL1MB, President of WARO. The smorgasbord put on by the hotel was magnificent and the whole setting was beautiful. The Australian visitors were welcomed with open arms and there were many happy people meeting friends they had made over the years, particularly with the WARO girls and their OMs who had come across the sea to join us at our ALARAMEETS over

Photo 2: ALARA representatives at WARO.

Photo 3: YLs at the WARO anniversary celebrations.

the years. We were delighted to be able to return the compliment.

The celebrations continued into the evening when we met at the RSA for a meal and next day when we met at the Rotorua Museum. This was of special interest as it had started life as a mineral spring health offshoot of the hospital. Many of the baths and the plumbing for the movement of the natural mineral spring waters have been preserved. The many photographs on display showed us the original arrangements. The facade of the museum is magnificent. It is typical half-timbered Elizabethan style and although the original building has been added to over the years the style has been maintained. There is actually a spa and mineral bath complex nearby but it is built in a typical Spanish Mission style in a warm pinkish stone which does not look out of place in the lovely gardens surrounding the Museum.

As part of the museum tour the group had been booked into the cinema. This featured a story of some of the history of Rotorua in the early days, including the sights they saw which no longer exist. In particular they saw the pink and white terraces that surrounded a series of hot pools and geysers which were flooded over as a result of earthquakes in the early 1900s. As cinema watchers we were treated to the sensation of the earthquake when our benches suddenly started to shake and move up and down and back and forth. Very unexpected and effective!

It was with some sadness when we said goodbye to our ZL friends.

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Oxley Region Amateur Radio Club Inc
PO Box 712 Port Macquarie NSW 2444

Station Callsign VK2BOR

Talk-in frequency 146.700 Mhz (91.5 Hz CTCSS)

Spotlight on **SWLing**

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Winter has arrived and I am spending more time listening to the bands. I was surprised to find a master list of international stations currently broadcasting on HF. It is only a guide as broadcasters often have to alter their frequencies due to the presence of other stations also on or adjacent to the channel. Many broadcasters list frequencies in advance but never utilise their chosen application. These registrations are simply classified as wooden, hence one should be careful relying on master lists, which are only a guide.

I have written previously of the station in Myanmar that is easily heard in our local evening hours on 7110. This is an Intruder in the 40 metre amateur DX segment. It has been widely heard throughout the world as there are no other broadcasters to cause QRM. Instead hams are the ones experiencing interference. I don't think Myanmar, formerly known as Burma, is a member of the ITU and does not co-ordinate with other broadcasters in the HFCC process. Cuba and Taiwan are among other nations that refuse to participate in the HFCC although Cuba is a member of the ITU. Taiwan was excluded from the ITU at the insistence of China when the latter was admitted to the UN in 1971.

There has been speculation as to the location of this Myanmar broadcaster and there are two known sites, one in Yangon, the former capital and the other at Napydaw, which is in the centre of the country. The Yangon site seems to have been phased out; they were using older transmitters which were drifting about. Many listeners have become confused after hearing different identification announcements but these appear to be radio stations not too far from Napydaw and being relayed from the same shortwave sender. Programming seems to be educational interspersed with popular Burmese cover versions of western hits. Some have reported that they are hearing English lectures at around 1420 and until sign off around 1500.

I am hearing a broadcaster on 11300 at 1130 in Chinese. This is within the exclusive aero allocation and this channel is specifically used for communications in Africa and the Middle East. The offending station is a clandestine believed to be located somewhere in Taiwan and supports the Falun Gong Movement, which is banned in the PRC. An epic battle has been going on between this small station and the Chinese authorities for many years. The latter quickly jams the station, which is known as the Sound of Hope and as a result, SOH shifts about to find a clear channel before it is drowned out by a continual traditional Chinese music program which mainly uses percussion instruments. 11300 has been spared this QRM but it probably will appear and SOH will pop up elsewhere.

The official Radio Taiwan International in Taipei has been heard on 9465 in English. It is beamed to Australia and South-East Asia and is also on 7445. It has been many years since I have heard it and it was one of the first stations that I logged when I started out listening to shortwave. It was on 7130 in English with the Dragon Show and was then known as the Voice of Free China.

Relations between Taiwan and the PRC have improved although unofficially. It is worth noting that the SOH has been operating illegally in Taiwan using converted amateur rigs. No wonder they are very rarely heard, being drowned out by the clashing cymbals. I do note that the jammers seem to take a break at the top of the hour revealing the low-powered SOH signals for a few minutes.

There is a very strong noise centred on 7285 at 1000 and I initially presumed it was Radio Australia testing DRM. However it happens to be Radio New Zealand International from near Lake Taupo. I believe there is a companion AM signal but it is not as strong as 7285. Must Google up for DRM software! Incidentally Radio Australia commenced testing DRM as from April 1st. The schedule is as follows:

Time (UTC)	Frequency (kHz)	Target	DRM mode
0100-0300	19000	central Pacific	mode C 10 kHz 16QAM level 1 11 kb/s
0700-0900	7410	south-west Pacific	mode B 10 kHz 64QAM level 2 24 kb/s
0900-1100	9475	south-west Pacific	mode B 10 kHz 64QAM level 2 24 kb/s
1100-1300	6080	west Pacific & PNG	mode C 10 kHz 16QAM level 1 11 kb/s
1300-1500	9890	central Pacific	mode C 10 kHz 16QAM level 1 11 kb/s
1500-1700	5940	SE-Asia	mode C 10 kHz 16QAM level 1 11 kb/s
1700-1900	9475	SE-Asia	mode C 10 kHz 16QAM level 1 11 kb/s

It is interesting that they are using 19000 between 0100 and 0300. There are very few broadcasters using that allocation and I surmise that it could be an experimental feeder frequency. Also I have noted that there are existing broadcasters on both 7410 and 9475, the latter being RA itself. Most of the tests are in the slower level 1 mode and it will be interesting to see how the quicker B Mode will go on 7410 and 9475. Incidentally the transmissions will come from Shepparton using a sender at 40 kW.

Well that is all for now.

VK5news

Charles Prime VK5HD

The South East Radio Group (SERG) Convention 9 & 10 June, 2012

The fox hunting group at the SERG convention in 2011.

Due to an overwhelming response from traders and the attending public, the South East Radio Group (SERG) Convention on the Queen's Birthday long weekend in June this year will be returning to its traditional two-day format.

The first SERG Convention was held over the June long weekend in 1963 and, since then, has become a very popular event on the amateur's calendar. In 2011, the SERG held its 48th Convention and it was the 23rd year that the National Fox Hunting Championship has been an integral part of the weekend's activities. The group is already looking toward its half century celebrations to be held in 2013 and they would like to see as many people as possible who have attended over the years to be there.

Over the years the SERG has attempted to foster an interest in the noble and ancient art of 'home brewing' by conducting its very popular home brew competition at the Convention. With some positive and most welcome financial support from an individual (who wishes to remain anonymous) the competition has been expanded with the introduction of various categories from the novice to the very experienced builder. There are various categories of construction to suit everyone and they attract great interest from those attending with the rewards for those displaying their 'home brew' items being very attractive.

The venue this year will again be at the Scout Hall in Margaret Street, Mount Gambier. This has proven to be very popular in the past due to the space available, the excellent catering and the open fires which create a great opportunity for people to stand around and discuss this wonderful hobby.

Entry fee this year will remain only $5.00 and the club was pleased that the chef from last year has agreed to return to the event so catering will once again be available at the venue. This year's program will continue with the excellent post-convention BBQ and a discussion on the weekend's activities at the clubrooms at the Reidy Park Centre on O'Halloran Terrace, Mount Gambier on the Sunday night.

For the fox hunters, the Australian Fox Hunting Championships will remain a two day event with the first event, the Sniffer Hunt, starting at 1100 on the Saturday as usual. For traders, the Hall will be open from 1100 on the Saturday with the general public being admitted from 1200. On the Sunday, the Hall will open from 0900 and will be closing at 1600. For all table and general enquiries, please send your requests to *vk5sr@wia.org.au* and for all other information, please refer to the Club's website at *http://serg.mountgambier.org/convention.html*

Remembrance Day Contest

Alan Shannon VK4SN - Contest Manager • vk4sn@wia.org.au

Hi, I'm Alan, your newly elected Remembrance Day contest manager.

I was nominated to the WIA board by our outgoing contest manager, Peter Harding, and had several supporters who were aware of my background. I grew up with amateur radio around me as my Grandfather was a keen ham from the halcyon days. I am ex RAAF signals and have been licenced since 1984. Contesting is one of my passions of the hobby, gaining over 45 placings in the last ten years and I always participate in VK contests when I can.

The new rules have been a combination of suggestions from me, other clubs, full time and part time contesters - and you. It has been this feed back over the last month that has shaped the rules as they now exist.

The rules are simplified and will make it easier for the casual contester to enjoy the weekend.

In brief, the changes to the rules were as follows.

1. Bring forward the start and finish times
2. Move the repeat contacts time from 2 to 3 hours
3. Working your own state is now allowed
4. Amalgamate all the phone modes into one
5. Amalgamate all bands
6. Allow only ONE callsign per operator for the contest period.
7. Introduce Teams
8. A new exchange is introduced
9. QRP section introduced.
10. Andrew VK1DA put forward a more even scoring formula which is now included for working out the state scores.

The proposed changes saw many emails change hands, but in general it was agreed that the RD Contest needed an overhaul and most of the changes were good. Hottest topics were the number exchange, how the teams work, and combining all phone modes into a singular phone category.

The number exchange method had several very strong supporters for either a non-sequential or serial number, but neither side had more supporters than the other.

Almost everyone was in favour of bringing forward the start and finish times to allow those who went portable to get home by night. Only two responses against this were received as ones wife wanted to go shopping and the other couldn't get out of bed in time.

The amalgamation of the bands and the phone modes will most certainly have a significant impact on the final score. Ones approach to the contest will need careful consideration if you plan to be amongst winners. HF diehards will have to visit VHF/UHF and vice-versa. It will be good strategy to change bands as the 3 hours repeat contact time is an hour more than previous years. The 3 hour repeat time now falls in line with other VK contests.

A proposal to change to a non-sequential exchange numbering system was accepted as it was noted that operators who joined in later in the contest felt at a disadvantage and sometimes embarrassment when giving out small numbers and receiving huge ones in return. This is by no means a new idea, as some of the world's number one contests use a non-sequential number exchange.

Teams are not a new concept, but are a hot topic on whether it should have been included in the new rules or not. I like to think of the 'teams' as your platoon or similar, working alongside your mates. It is intended to enhance camaraderie and, as no one likes letting the team down, performance is better and longer time is spent on air. Please read the Team scenarios' in the rules for a full expanation. Team scores do not affect the state score.

I am sure that we have reached the happy medium with the majority of people being happy with the new changes. My sincere thanks to everyone who submitted feedback to assist in the overhaul and simplification of the Remembrance Day Contest.

Alan VK4SN

The new rules are as follows:

1. Contest Introduction

This contest commemorates the Amateurs who died during World War II and is designed to encourage friendly participation and help improve the operating skills of participants. It is held on the weekend closest to the 15th August, the date on which hostilities ceased in the southwest Pacific area.

It is preceded by a short opening address by a Guest Speaker transmitted on various WIA frequencies during the few minutes prior to the contest. During this ceremony, a roll call of amateurs who paid the supreme sacrifice during WWII is read.

The perpetual trophy is ordinarily held by the WIA at its national office and is inscribed annually with the name of the winning State or Territory.

2. Objective

Amateurs in VK, ZL and P2 will endeavour to contact other amateurs in VK, ZL and P2.

* VK, ZL, and P2 mean any station operating within Australia, New Zealand or Papua New Guinea and their external territories.

* Points are only awarded for valid contacts between VK, ZL and P2 stations.

3. Contest Date & Time

Sat 11th August 2012, 0300 UTC to 0259 UTC Sun 12th August 2012.

As a mark of respect, stations are asked to observe 15 minutes silence prior to the start of the contest, during which the opening ceremony will be broadcast.

4. Categories

1. Single Operator
2. Single Operator - QRP
3. Multi-Operator – Single Transmitter (Multi-One)
4. Multi-Operator – Unlimited (Multi-Multi)

5. Sub-Category Modes for Single Operators

1. Phone (AM, FM & SSB)
2. CW (CW & RTTY)
3. Mixed

6. Permitted Bands

1. Contacts may be made on MF (160M), HF and VHF & above bands *except* for WARC bands (10, 18 & 24MHZ) which are excluded by IARU agreement from all contest operations.

7. Multi-operator Stations

1. Multi-operator *single transmitter* stations
   a. Are only allowed one transmitted signal on air at any time.
2. Multi-operator *Unlimited* stations
   a. Are only allowed two transmitted signals on any band, one per Phone and one per CW as per rule 5.1 and 5.2.
   b. Simultaneous transmissions on different bands are permitted.
3. Multi-operator stations are mixed mode only.

8. Teams

Team scenario 1

A station and two of their friends operate in the contest from their respective home QTH and participate in the contest and submit their logs in the normal manner. They are eligible for any awards in the category they entered as single operators. The contest manager was notified that these 3 stations want to form a team. Their scores are tallied together and that is the team score.

Team scenario 2

A multi-single club has 2 operators who wish to work from their home QTH. The 2 single operators and the multi-single club contest and submit logs in the normal manner. They are eligible for any awards in the category they entered. The contest manager was notified that these 3 stations want to form a team. The 2 single operators and the club multi-single stations scores are tallied together and that is the team score.

1. A team can consist of only one of the following two options.
   a) Three single operator stations
   b) Two single operator stations and one multi-single station
2. A team can consist of stations located anywhere in VK, ZL, or P2.
3. An operator can only be included in one team.
4. Clubs may enter multiple teams of 3 call-signs.
5. The 'Team Leader' MUST nominate his team to the Contest Manager before the start of the contest. Email to *vk4sn@wia.org.au* with the subject "RD Team Submission".
   a) Nominations must include the Callsigns and Operators Name. Where multiple teams from one club are submitted, it is suggested to use Team Names, example: Tazzie Devils
   b) The Team leader must supply postal details for receipt of any awards.
   c) Once the contest has started, team members cannot be changed.
6. The winner of the team initiative will be the highest combined score from any one team.
7. Team scores are not included in the determination of the winning state.

9. Contacts

1. Suggested Call: "CQ RD", "CQ Contest", or "CQ Test"
2. Exchange: A valid exchange consists of RS(T) followed by a three figure number as follows:
   a) For a single operator, the number of years you have been a licenced Ham. For example, if this is your 1st year as a ham then you will sign RS(T) 001. Round off to the nearest whole number. All zeros are not accepted.
   b) For a multi-op or club station, the number of years of the longest licenced Amateur.
3. On all bands, stations may be contacted at intervals of not less than THREE hours since the previous contact on that band and mode.
   a) FM & SSB count as one mode, as does CW & RTTY count for the CW mode. Therefore one cannot QSO with a station in FM and work them on SSB on the same band before the three hours is up.
4. No cross band contacts are allowed.
5. Exchange of contact information via satellites, telephones, repeaters, Echolink, IRLP, or the internet is not in the spirit of the contest and is banned.
6. Contacts via satellites are not allowed for scoring purposes.
7. Contacts within the same call area are permitted.

10. Scoring

1. On 160 metres two points per completed valid contact.
2. On 23 cm or higher bands two points per completed valid contact.
3. On all other bands one point. (no WARC bands allowed)
4. On CW and RTTY, irrespective of band, double points.
5. All scores obtained by the *transmitting station* between 0100 and 0600 LOCAL time, are tripled.

11. General Rules

1. W.I.A. General Rules for All Contests apply unless otherwise specified.
2. All operators of single operator stations must perform all operating and logging without assistance.
   a) Use of public clusters only, is allowed on 50 MHz and above.
   b) Use of skimmer like technology with a bandwidth greater than three kHz is not allowed.
3. Holders of more than one licence or callsign MUST use only ONE callsign for the contest duration.
4. Automated operation is not permitted.
5. Computers can be used for logging and CW or RTTY reception and/or keying.
6. All operations must be in accordance with the band plan for the band in use, as published in the current edition of the WIA Callbook.
7. Any station observed as departing from the generally accepted codes of operating ethics or licence conditions may be disqualified.

12. WW2 ex Military equipment

1. Operators using Ex WW2 equipment will be awarded with a special certificate acknowledging their participation and use of such.
2. A declaration with the heading of WW2 Equipment will operate said units within the "ORIGINAL manufactures specified operating conditions", e.g. no mods to boost the output power etc. A copy of the preferred Certificate is available on the WIA website at *http://www.wia.org.au/members/contests/rdcontest/documents/WWII%20Declaration%202012.pdf*
3. Please include the declaration with your log submission.

13. Log Submission

1. Electronic Logging
   a) Use of logging software is preferred as the output file will be in Cabrillo format which suits our log checking software. See below for logger links.
   b) Logging software will automatically print a summary in the Cabrillo header.
   c) Email Logs to *rdlogs@wia.org.au* with your callsign in the subject.
   d) On receipt of your log, the robot will send an acknowledgement email to you. Just to be sure, it is advised that you flag your email for "confirmation of receipt", in which case you will receive two emails acknowledging receipt of the log.
2. Paper Logs
   a. Hand written logs are not preferred, however if sent must be legible and contain no more than 100 contacts.
   b. Entrants are encouraged to enter the paper logs into a logger after the contest and email the Cabrillo log as indicated above.
   c. Paper logs should be accompanied by a Summary Sheet showing all the details as per the log example below and nominated team name if used.
   d. Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest; signed & dated. Please supply a contact telephone number and email address.
   e. Send paper logs and summary sheets to: RD Contest Manager. 43 Jahn Drive, Glenore Grove, QLD 4342.
3. If you genuinely have problems with the above, then acceptance of .xls, .csv, .mdb, or similar files will be considered for processing. A PDF or .doc(x) word file will be considered a paper log.
4. Emailed Logs are to be received by the contest manager no later than 30 days after the contest ends.
5. Paper logs are to be postmarked no later than 30 days after the contest.
6. All logs will be receipted by email or phone if no email exists for the operator.
7. Logs received after the closing date will not be eligible for processing.
8. Paper logs will not be returned unless a SASE is forwarded requesting return of the log.
9. VK entrants temporarily operating outside their allocated call area, including those outside continental Australia as defined for DXCC, can elect to have their points credited to their home State by making a statement to that effect on their summary sheet or in the 'soapbox' field in the Cabrillo file.

14. Contest Results

1. **Determination of Winning State or Territory.**
   State score = (Total points from logs submitted) divided by (number of licencees in the state or Territory), excluding beacons and repeaters as published in the WIA Callbook for that year.
2. Unless otherwise elected by the entrant concerned, the scores of VK0 stations will be credited to VK7, and the scores of VK9 to the mainland call area which is geographically closest. Scores of P2, or ZL will not be included in these calculations, although entrants in those areas are eligible for all certificate awards.
3. Results will be published 90 days after the close of the contest on the W.I.A. website and winners announced in AR magazine as soon as practical.

15. Contest Awards

1. Entrants must make at least 25 contacts to be eligible for awards.
2. Overall 1st, 2nd and 3rd place certificates will be posted to recipients.
   a) Single Operator Phone
   b) Single Operator CW
   c) Single Operator Mixed
   d) Single Operator QRP Phone
   e) Single Operator QRP CW
   f) Single Operator QRP Mixed
   g) Multi-operator – Single Transmitter
   h) Multi-operator – Multi Transmitter
   i) Team
   j) The top three foundation scorers regardless of category.
3. Certificates will be awarded to 1st, 2nd, and 3rd placegetters for each VK call area, and ZL & P2.
   a) Categories "a" through "i" as above.
4. Participants using WW2 ex military equipment will receive a special acknowledgement certificate as well as any certificates gained in winning any section.

16. Logging Software

1. Downloads
   a) VK Contest Log (VKCL) by Mike Subocz VK3AVV, *http://web.aanet.com.au/mnds*
   b) John Drew VK5DJ RD logging program *http://vk5dj.mountgambier.org/Amateur_radio.html*
   c) WinRD+ logging program by James McBride VK6FJA *http://www.rjmb.net/rd/index.htm*
   d) SD logging program by Paul EI5DI *http://www.ei5di*
2. Remember to check for updates immediately prior to contests to make sure you have the latest software that will contain up to date scoring and rule changes.

17. Example Log

1. Paper logs should be written to resemble the format for Cabrillo, as indicated below.
2. Every effort to retype paper logs into logging programs, or Excel is encouraged.

CALLSIGN: VK4SN
CLUB: Lockyer Valley Radio & Electronics Club Inc
CONTEST: Remembrance Day
CATEGORY: SINGLE-OP ALL MIXED
CLAIMED-SCORE: 10
OPERATORS: VK4SN
ADDRESS: NR STREET
ADDRESS: SUBURB
ADDRESS: STATE, POST CODE

Freq	Mode	Date	Time	Call	RST	NR	RST	Nr	Pts
(MHz)			(UTC)		Sent			Rcvd	
7087	PH	2012-8-11	0200	VK1ABC	59	038	59	002	1
7087	PH	2012-8-11	0201	VK1DEF	59	038	59	012	1
7005	CW	2012-8-11	0205	VK4ABC	599	038	599	020	2
1825	CW	2012-8-11	0210	VK2ABC	599	038	599	003	4
1855	PH	2012-8-11	0215	VK3ABC	59	038	59	040	2
END-OF-LOG									

AMSAT

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VO-52 is back

There is more news this month about successes with VO-52, MO-72 and RAX-2 and the end of Compass-1.

VO-52 recovery

Good news for a change. VO-52 (HAMSAT or VUSAT) has been turned on again and is using the Dutch transponder. This mode U/V transponder was designed and built by William Leijenaar PE1RAH. It was tested soon after VO-52's launch but has not been used for the past six years. It uses similar passbands to the Indian transponder but the beacon sends a CW message on 145.86 MHz instead of a continuous carrier. The beacon is about 100 mW and the transmitter has an output of one watt over the 50 kHz passband. The beacon message reads 'HI HI HI THIS IS VU SAT WITH THE DUTCH MODE UV TRANSPONDER MADE BY WILLIAM LEIJENAAR 73 DE PE1RAH'.

The Dutch transponder uses a diode limiter instead of AGC control so it will react to strong stations differently. A very strong uplink will cause it to distort the passband so please keep your power levels down. You can tell if someone is using too much uplink as the beacon will FM. Also there have been reports that the Dutch transponder frequency is not as stable as the one on the Indian transponder. Differences of +/- 500 Hz between passes have been noted.

As for the satellite itself, the ISRO (Indian Space Research Organisation) reports that VO-52 is in good health. It is difficult for us to judge as it does not send any telemetry down on either beacon. The ISRO uses frequencies around 137 and 149 MHz for telemetry and control. VO-52 is owned and operated by the ISRO, and as such must abide by government regulations which include telemetry information in this case.

RAX-2 success

Radio Aurora eXplorer (or RAX-2) is a cubesat designed and built by the University of Michigan. Its mission is to measure ground based radar signals in the northern hemisphere to determine the formation of magnetic field- aligned plasma irregularities (FAI). These FAI disrupt communications with satellites and at HF. On the 8th of March RAX-2 recorded an irregularity at an altitude of 100 km in the ionosphere. This coincided with the solar storm that affected HF communications. It was the first time such an anomaly had been recorded. RAX-2 has shown again that cubesats can be used to perform useful scientific experiments and help our understanding of the ionosphere. More information at RAX-2's website [1] and the press release [2]. RAX-2 has a 9k6 GMSK downlink on 437.345 MHz. Beacon details are found under the Operations menu on their website.

MaSat-1 (MO-72) pictures

MaSat-1 goes from strength to strength. The website has thirteen photos received from the satellite of southern Africa, Australia and Antarctica. The Australian ones feature a cloud free view of south east VK5/western VK3 (an achievement in itself) and the south west section of VK6. Due to the passive stabilisation (that is, just using magnets) only the southern hemisphere can be photographed. The press release linked to the home page has the first six photos and a link to the full 640 x 480 resolution versions [3].

Another article on their website goes into detail about how they determined which of the nine satellites launched is MaSat-1. When multiple satellites are launched they tend to stay relatively close by for some time. Even after a month they may only be a couple of minutes apart. Four objects (known as C to F) have yet to be identified. The MaSat-1 controllers have calculated that theirs is most likely to be object E. This was made with careful measurements of the CW beacon's Doppler shift. Comparisons were made with measurements taken from the cubesat Xi-V (CO-58) to confirm their results.

Compass-1 mission ends

Unlike VO-52, Compass-'s mission has ended. Compass-1 was designed and built by the students at Aachen University in Germany. It was launched in 2008 with the aim of taking pictures, using a GPS receiver and 3-axis attitude control. It was partially successful. The camera did take pictures and send them to Earth but they were over exposed because the automatic brightness adjustment was not working. The GPS receiver could not lock onto at least four GPS satellites to obtain a valid position due to a bad connection with the patch antenna. The 3-axis attitude control has a software bug that stops it getting the right information from its sun sensors. This stops it from calculating its current attitude. However the de-tumbling

controller worked. From my point of view, Compass-1 had two notable features. Its CW beacon was distinctively chirpy with its whoop-whoop sound. Also Compass-1 was successfully rescued by amateurs. The control codes to various telemetry functions (using DTMF on the two metre uplink) were published. Amateur stations were able to request for more commands to set control parameters to adjust battery charging and transmitter timers. The option is still open to anyone who wants to try 'waking it from the dead'.

In an email to the AMSAT-BB Professor Bernd Dachwald thanked the amateurs for their efforts in extending Compass-1's life from the projected six months to nearly four years. He hoped that a successor would soon be built and launched [4].

Final Pass

Some you win, some you lose which sums up the satellite recovery results of late. My first concern when I heard VO-52 went silent was that the battery had failed. Since it is a commercial off the shelf lithium ion battery instead of a more exotic space rated type, it is impressive that it is still going after seven years in space's harsh environment. Thankfully this isn't the case and we can get some more years out of VO-52.

References

[1] *http://rax.engin.umich.edu/*

[2] *http://sri.com/news/releases/032212.html*

[3] *http://cubesat.bme.hu/en/hirek/*

[4] *http://www.raumfahrt.fh-aachen.de/compass-1/home.htm*

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly net Australian National Satellite net

The net takes place on the second Tuesday of each month at 8.30 pm eastern time, that is 0930 Z or 1030 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater:146.850 MHz
VK2RIS Saddleback repeater: 146.975 MHz
VK2RBT Mt Boyne Repeater on 146.675 MHz

In Queensland

VK4RIL Laidley repeater on 147.700 MHz
VK4RRC Redcliffe 146.925 MHz IRLP node 6404, EchoLink node 44666

In South Australia

VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz IRLP node 6278, Echolink node 399996

In Tasmania

VK7RTV Gawler 6 m. Repeater 53.775 MHz IRLP node 6124
VK7RTV Gawler 2 m. Repeater 146.775 MHz. IRLP node 6616

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9558. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email. Frequencies and nodes can change without much notice. Details are put on the AMSAT-VK group site.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night. Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

Don't forget **3 - 17 May | YL International Meeting in Adelaide**

YL International Meeting Starting in Adelaide and finishing in Darwin.
YL meet from around the world with their OMs. The Meet is open to YLs and their OMs. You don't have to be a member of any organization or even licensed but should be interested in amateur radio. Most participants are active on air but that is not a requirement for attendance.
Check our website ***www.ylinternational2012.com*** for more details.

VK2news

Tim Mills VK2ZTM
vk2ztm@wia.org.au

This month ARNSW will conduct the bi-monthly Trash & Treasure on Sunday 27 May at the VK2WI site. Included in activities will be assessments for all licence grades. In the early afternoon the Radio Home Brew and Experimenters Group hold their meeting. The previous Sunday, 20 May, will be a one day Foundation course with an 8.30 am start. Inquiries by phone 02 9651 1490 or email *education@arnsw.org.au* Check out Training and Exams on the web site *www.arnsw.org.au* If you are aware of anyone wishing to undertake a Foundation course or other assessments please advise them that these are available at ARNSW, Dural. For those in the eastern suburbs of Sydney the Waverley ARS has a Foundation weekend on the 12th and 13th May.

At the close of nominations for the 2012/2013 committee of ARNSW there were less than required for an election. The AGM was held last month. The Sunday evening news bulletins in both VK2 and VK4 on 160 metres have at times clashed in the time slot. Both transmitters in use are crystal locked with VK2 on 1845 and VK4 on 1843 kHz. VK4 have tried the evening transmission as the morning coverage has been very poor. Now that standard time and winter conditions have returned, staggered time slots may resolve the clash or now that winter is coming their morning coverage may improve. The VK2WI news is automatically relayed through several repeaters around Sydney. One of these is the St.George Mt. Bindo 660 in the western Blue Mountains. A fault has developed in the linking transfer which will have to wait until they next pay a maintenance visit. The repeater itself is still OK.

The Fishers Ghost ARC recently held their AGM where Life Membership was bestowed on Ted Powell VK2AU and Luis Cifuentes VK2TAR. The FGARC has just celebrated their 30th birthday. They mounted a display in three glass cabinets at the Campbelltown library of a wide range of radio equipment and associated amateur radio material for the last two weeks of March. More information can be found at *www.fgarc.net*

Syd Griffith VK2AHF last March was appointed as Chief Technology Officer for the New South Wales Police. He had previously been awarded the Australian Police Medal in the Queen's Birthday Honours list.

The ARNSW Radio Homebrew and Experimenters Group meet on the first Tuesday evening of the month. Have a net on the third Tuesday evening on 2 metres followed by 80 metres and gather at VK2WI Dural on the afternoon of the bi-monthly T&T Sunday. Last year they ran a successful challenge to make a receiver capable of picking up the VK2WI broadcasts on 80 metres. This year Peter VK2TPM has suggested another challenge – to make an AM transmitter for 40 metres for the frequency of 7.125 MHz.

The Illawarra ARS for the past six years have met at the Visitors Centre Industry World in the suburb of Coniston. From April they have a new venue on the second Tuesday evening of the month. The Society thanks the generosity of BHP, Blue Scope Steel and Industry World for the old venue. Next month will see the annual Oxley Region ARC field day at Tacking Point, Port Macquarie over the June holiday weekend.

The Central Coast ARC commissioned their six metre repeater located at the Somersby site at the end of March. Identified as VK2RAG, it is on 53.725 MHz and needs a 91.5 Hz CTCSS tone. Linked access to one of their 70 cm repeaters will follow – most likely 439.725. There are plans to provide a relay of VK2WI News through it. The hard work of Don VK2ZCZ, Bob VK2ZAR and many others got the project up and running. A photo display is to be found at *www.ccarc.org.au*

WICEN NSW have some major activities in the next few months. BWRS Navshield July 7th and 8th; Shahzada week commencing August 27th; Trek for Timor September 15th. *www.nsw.wicen.org.au*

From late January in NSW, and in some other States, all police officers have become radio inspectors. In other States this appointment is at Sergeant or higher ranks. You will find the announcement in the Commonwealth Gazette on 25th January. The Planning System Review undertaken by the NSW Government last year where many VK2 amateurs made submissions on antenna mast structures was considered at the end of the review period to be outside the 'guidelines'. In later advice from the Review panel this may now be addressed in a Green Paper due for release about now.

73 – Tim VK2ZTM

DX-News & Views

John Bazley VK4OQ
e *john.bazley@bigpond.com*

Well in spite of poor conditions there is still plenty happening on the HF bands and we start with operations by VKs.

YJ0VK: Six operators from Australia will be on **Vanuatu** April 21-May 5. Flights and lodging are booked and the team is now doing their detailed planning. They will focus on 30, 17 and 12 metres and train their less experienced team members. They will be at the Nirvan Resort, Port Vila on Efate Island. They will have three stations operational. Operators are VK3QB, VK3HJ, VK3GK, VK3GHM, VK3CBV and VK2CA, who will also handle QSLs and the website. The gear comprises three Kenwood TS-480X rigs, 200 watts, verticals, dipoles, an inverted L for 160, and a Fritzel FD4 80-10 m multiband wire antenna. An emphasis will be put on 30, 17 and 12 metres and they will be operating on all bands from 1.8 through 28 MHz, SSB, CW and RTTY/PSK31. They have a website at http://yj0vk.odxg.org/yj0vk2012/default.html. QSL via LoTW, direct or to the VK QSL bureau, to VK2CA.

Chris VK3FY will be '*part of (a) scientific climate program*' working on **Lord Howe Island** (LHI) in late May. He will be there and QRV as VK9LHI between May 27th and June 2nd. Pat VK2PN and Miro OK1NG will be on LHI from May 23rd to 30th, including participation in the CQ WPX CW contest as VK9PN. It is possible Pat and Miro will prolong their stay until June 2nd. Since Chris will be working during the day on Monday-Friday his activities will be 'curtailed to evenings'. His station will include a rig, amplifier, tuner and long wire and he will be operating on CW, SSB and RTTY.

Pierre ZS1HF (ZS8M) tells The Daily DX he is 'in the planning stage to lead a DXpedition to **Marion Island**, hopefully in April 2014'. It is dependent on 'permission granted for a DXpedition team by the Department of Environmental Affairs'. The size of the potential DXpedition team is contingent upon how many beds are available on the new SA Agulhas II. The team selection will 'depend on a number of factors, but most importantly trying to accommodate as many modes and bands as possible' says Pierre. Team members will need six weeks as it takes five to six days sailing each way and the plan would be to stay for four weeks. Another hurdle will be the negotiation of installing antennas to avoid the hurting or killing of any birds. A DXpedition to Marion Island, which is # 10 on 'The DX Magazine's Most Wanted List' will be of most interest and more details will be forthcoming.

Susan W7KFI and her boat 'Dharma'.

Rob N3HU says he is headed back to **Afghanistan**, where he has the T6RH callsign. He says he should get there about March 30th. He will be at T6RH until mid-May. His next stint will be about July 1-November 1. He says the operation will be the same as last time, which will include the PSK modes, SSB and 'search and pounce' on CW. Rob figures he is not good enough on Morse to handle a pileup. QSL via NI5DX.

Alan VE1AWW confirms he is going back to CY0, **Sable Island**, for another three months, April-June. He says there are no firm plans yet; he will have to see what the workload on the island is like. QSL to his home call.

KH3 **Johnson Island**. There is still some uncertainty whether Susan W7KFI will manage to activate this spot. If she is unable to get permission to land there then she intends to operate from various islands in the Pacific.

7U50ND celebrates the 50 years of **Algerian** independence and the 20 years of the 7X2VFK Djelfa Radio Club. Activity will be May 20-26 from Djelfa. The '4th International Ham Meeting' is being held there with transportation available for the 300 km from the Algiers airport to the site. Also noted is there is salt rock, rock carvings and oases to visit while there. All are welcome. Requests to visit can be sent to *bodil17000@yahoo.fr* or Skype contact *bodill7000*

Starting May 23rd through May 29th KU5B will be in **Belize** and QRV as V31UB, including the WPX CW DX Contest. Look for him on 1.8 through 50 MHz on CW, RTTY and SSB. QSL via KU5B.

EA4DKJ is currently active from **Zimbabwe** as Z21DKJ. He is on the HF bands. QSL to his home call.

Japanese operators Shoji JA7HMZ and Akio JA7ZP plan to be on Pohnpei (OC-010), **Federal States of Micronesia** from May 25th to 29th, including the CQ WPX

CW DX contest. They will be QRV as V63DX and V63ZP respectively on 7 through 50 MHz. During the CQ WPX Shoji will be a single-op all band effort as V6A. QSL V63DX and V6A via JA7HMZ and V63ZP via JA7ZP.

OPDX reports that MJ0CFW on **Jersey** will be in the CQWW WPX CW contest May 26-27, single operator all band, low power. Operating will be Kazu JK3GAD (M0CFW). QSL via M0CFW or through LoTW.

Colin WA2YUN is currently working on **Wake Island** and expects to remain there for 'another year or more'. His KH9/WA2YUN 'ham schedule' is 'somewhat limited' as work takes up much of his time. He has an Elecraft K3, IC-7000 and Flex 1500 and uses the SPE 1K-FA amplifier running about 1,200 watts. For antennas he is using a Carolina Windom on 160 and 80 metres, a dipole for 40 metres, a vertical dipole on 30 metres, an A3S tribander at 17 metres and a five element six metre beam at 20 metres. In the near future he plans to have a six metre beacon QRV on 50.014 MHz using dual horizontal loops. Colin says he 'will try and provide contacts during contests'. QSL via K2PF.

In celebration of the Diamond Jubilee of Queen Elizabeth II Edward ZB2ER (ex ZB3E) will be QRV with special event call ZQ2ER from **Gibraltar** from May 5th to June 10th. QSL direct only to ZB2ER.

Mike ZB3M will also be celebrating the Diamond Jubilee of Queen Elizabeth II by signing ZQ3M. QSL direct only to ZB3M.

Montserrat is the destination again for John KB4CRT in early June. He will be QRV as VP2MRT on HF and six metres from June 6-13. This year he will also try PSK. QSL via KB4CRT direct with SASE or SAE and US$2. Once home he will upload to LoTW.

Now through the end of the year Florent F4CYZ will be QRV as CN2YZ from Tangier, **Morocco** especially during weekends. The Mediterraneo DX Club is hosting a website including a log search at *http://www.mdxc.org/cn2yz/*

Sergiy Shpak UV5EVJ has been QRV as 9Q0HQ/7 from Lubumbashi in the Katanga province of the **Democratic Republic of Congo** since January 22nd and will remain there until May 22nd. He is QRV on CW and SSB on HF. Sergiy is a pilot for the United Nations mission MONUSCO. QSL via UV5EVJ either direct or via the Ukraine QSL bureau.

Larry W6NWS is in the Cai Be of **Vietnam** and QRV as XV2W until June 12th. He will be QRV on 3.5 through 28 MHz, except 60 metres. Listen for him on CW and RTTY, and SSB 'if noise in the house permits'. He may also be on PSK. QSL via W6NWS.

PY0S. Amateur radio activities have been banned from **St Peter & St Paul Archipelago**. The Brazilian Interministerial Commission for the Resources of the Sea's programme aimed at 'the exploration, use, conservation and management of natural resources in the archipelago and its surroundings' specifically excludes amateur radio expeditions as they 'do not meet the objectives' of the programme itself (*www.mar.mil.br/secirm/i-proarq.htm*). LABRE and Brazilian DX groups are mobilizing the support of government representatives to try and reverse the decision.

Two OMs and two XYLs from Japan will be on *Aruba* May 8-14, operating160-6 m SSB, CW and RTTY. JA3AVO has the callsign P40X. That is OM Masumi Nakade. XYL Hiroko is JH3PBL at home and P40U on Aruba. OM Yoshinori JA3DFM has asked for the P40FM callsign, while his XYL Hideko, JA3OPB, has asked for P40PB.

EE8X, Tenerife Island, *Canary Islands*, will be Luis EA8AY's callsign in the CQWW WPX CW May 26-27, single operator all band. QSL via W2GR. *http://www.ea8ay.com/ef8x*

Dutch operators PA0VHA, PA3BAG, PA2A and PA2AM plan to operate from **Guernsey** (EU-114) from May 12th to 19th. They will be signing MU/home calls on 80 through 6 metres with an emphasis on 30, 17 and 12 metres. Listen for them on CW, SSB, RTTY and PSK modes. QSL via their home calls.

JD1BMH on Chichijima Island, **Ogasawara**, AS-031, will be on from April 22-May 4 by Harry JG7PSJ. He plans 160-10 metre operation, on CW, SSB and RTTY. QSL to JD1BMH via the bureau, or direct to JF7PSJ. *http://sapphire.es.tohoku.ac.jp/jd1bmh*

Another Ogasawara operation is JD1BLY by Makoto JI5RPT. His operation is April 29-May 5, with 80-6 metre activity and satellites, on CW, SSB and digital, but no six metre EME. QSL to JI5RPT. *http://www.ji5rpt.com/jd1* and Twitter real-time updates on *http://twitter.com/jd1bly*

And a third one! JD1BLC and JD1YBT will be on Ogasawara April 29-May 5, on 160- 6 metres CW, SSB and RTTY. QSL both to JP1IOF.

SV5/N6GQ, **Dodecanese**, will be on the beach for the CQWW WPX CW Contest May 26-27, single operator all band QRP, with a wire antenna. QSL via N6GQ.

Gabriele I2VGW plans to be operating as C6AGW starting April 26th through May 6th from **New Providence** main island (NA 001) as well as Bimini islands (NA048) and Berry islands (NA054), two quite rare and claimed IOTA references. And, what's more, before going back to Italy, from Long island (NA-001). So listen carefully to catch the right reference and location! For further information and updates during his trip, please have look at his DXpedition web site *http://www.mdxc.org/c6agw*

Good luck in the pile-ups until next month.

Special thanks to the authors of *The Daily DX (W3UR)* and *425 DX News (I1JQJ)-QRZ.DX* for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from *www.dailydx.com/trial.htm*

A BPSK bandpass filter

John Sutcliffe VK3TCT

Why a filter

Some time back when working Dr Robert Suding W0LMD using BPSK31, a well known digital mode, Robert informed me he was copying me perfectly using a filter where as my copy was about seventy percent; conditions were quite average. There is an advantage using a filter when DXing to attenuate strong adjacent stations, particularly when operating long path to Europe of a late afternoon through the South Island of NZ, where some station signals in NZ, China, New Caledonia and Australia can be very strong.

This filter works well and attenuates adjacent signals up to 50 dB; the filter is tuneable across most of the BPSK band and very easy to use. Speed is the essence while operating BPSK. Dr Suding was a very interesting contact, as he is a contributor to the ARRL Antenna Book, and his projects at the moment are designing alternative energy systems and electric vehicles.

The Design

The base design for my filter came from an article by Tony Mann and Todd Emslie, '20 Hz audio bandpass filter for filtering and amplification of weak DXTV video carriers' (1). I built their base design; the bandwidth was too narrow for BPSK use and needed to be modified to around 100 Hz.

As I was working in the dark and was not sure of the results, or even if the filter would work I used second hand parts for most of the initial construction; however the filter did work well but did need to be modified.

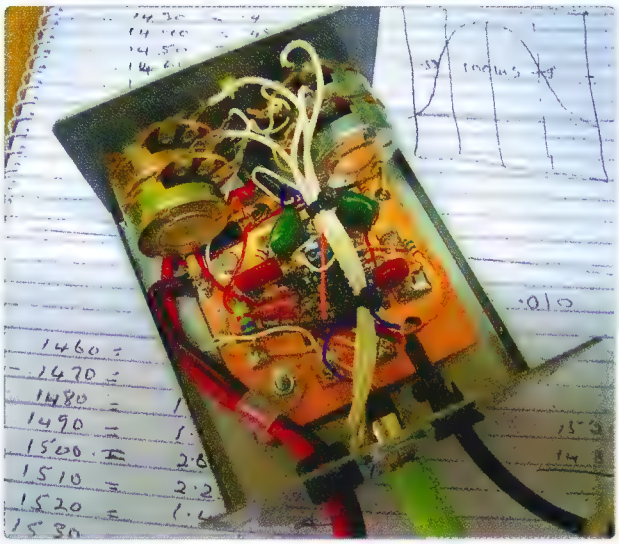

Photo 1: The completed bandpass filter.

The completed filter has a useable range from 500 Hz to 26 kHz, basically most of the BPSK band; any very strong stations outside of this region can be attenuated with my Kenwood TS-2000 receiver DSP. The overall gain of the filter increases with frequency. Be aware the filter is only around 100 Hertz wide so any signal greater than this will not be decoded correctly; also be aware with the filter in use you may be able to decode operators/signals that will not hear you when you attempt to make contact.

Modification

The key components that were altered were C2, C4, C5, C6, R2, R5 and R8. The gain of U4 is controlled by R8 and the original resistor was far too big for this application, alternatively a 50 k pot could be used to replace R8 and be used as a gain control. The frequency shift controls use 25 k and 10 k pots; the two pots are for coarse control and fine control.

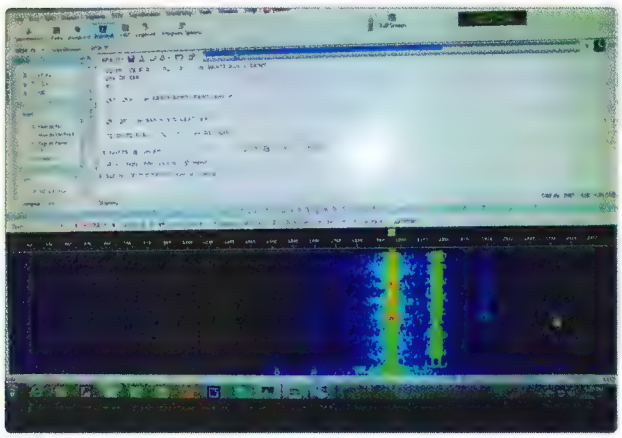

Photo 2a: Working RA9CU.

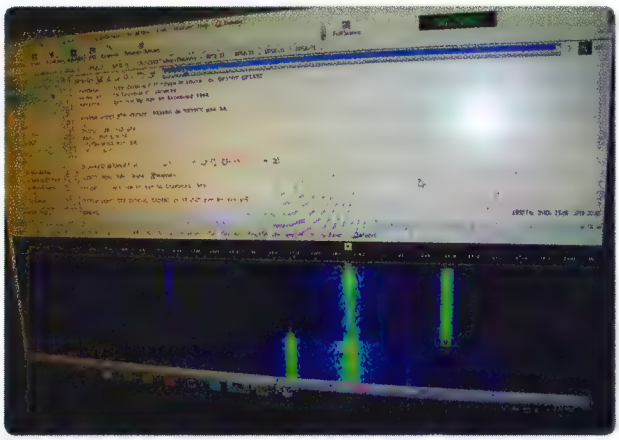

Photo 2b: Working YA3YAQ with strong stations either side.

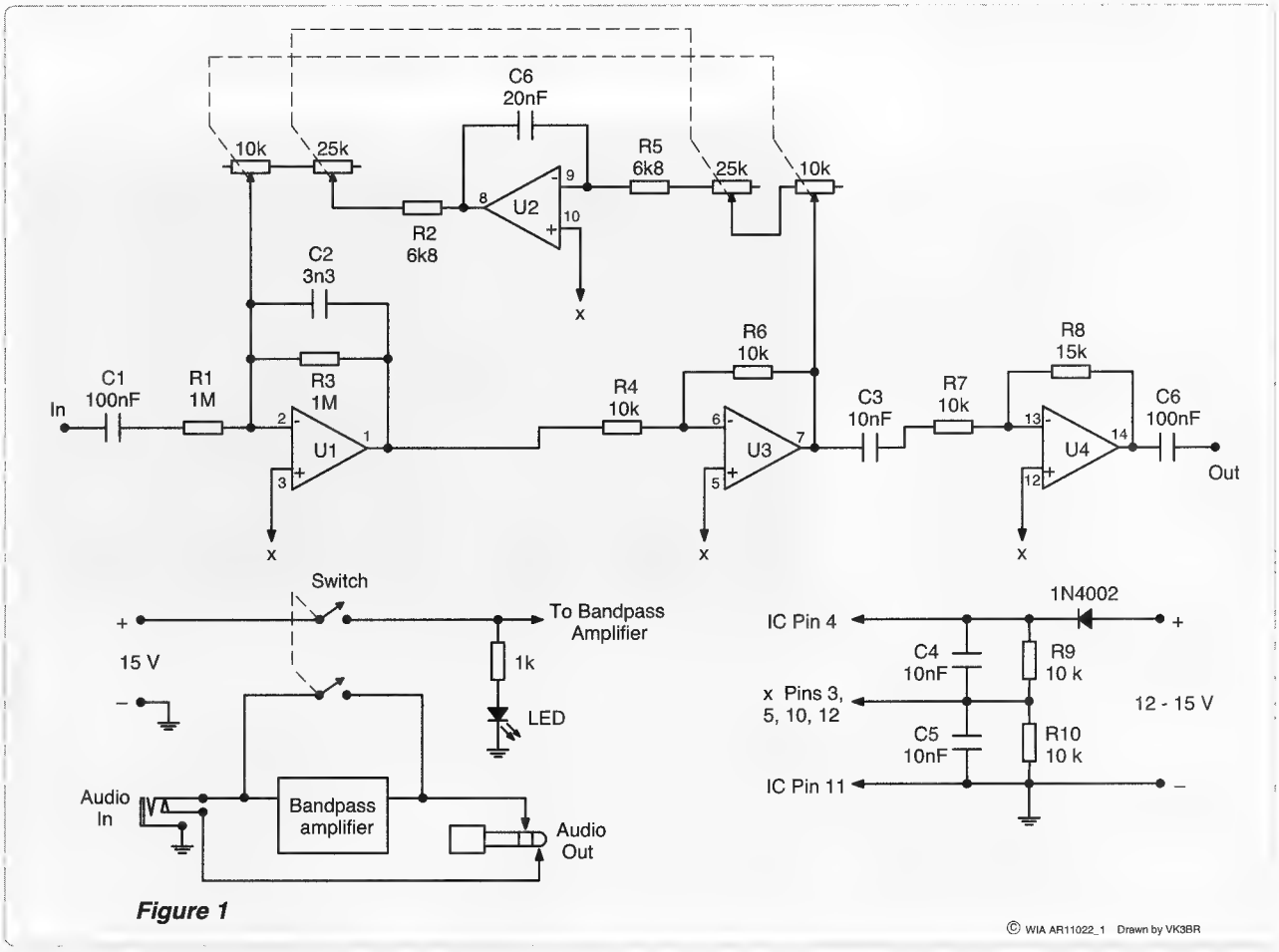

Figure 1: The bandpass filter circuitry.

Construction and Parts

The paddy board method of construction was used and this worked well. Bear in mind the operational amplifiers used in this circuit have a lot of internal gain so keep leads and components as short as possible; use shielded cable to the frequency shift pots as these are quite long and run above the IC. For connection to my equipment I used a three mm jack from the computer sound card and a three mm phone plug to my interface; this works well in principle as the filter can be tested by just plugging the filter into a laptop and using suitable software.

On the power into the device use a diode, which is optional; the only purpose here is to prevent destruction of the IC if the polarity is accidentally reversed. The LED is just fed by a 1 k resistor from the switched power, simple but works well. The power switch is the miniature type and a double pole double throw (DPDT) switch has six connections. You will note when the bandpass amplifier is turned off the audio signal is bypassed around the filter by the other half of the power switch, bypassing the filter with the power off is necessary so normal BPSK operations can occur without plugging and unplugging devices.

Pins 3, 5, 10 and 12 on the IC can just be daisy chained and one connection made to the voltage divider, R9 and R10. The main PCB can be made from a piece of blank printed circuit board 60 mm by 60 mm in size. Glue a piece of Vero PCB printed circuit suitably cut down to fit the IC and glue 'etch up' to the main PCB, taking care the IC pins do not protrude from the bottom of the IC PCB and short to the main PCB board. Assemble the parts on the circuit board first, double check the connections, and check again, then assemble the board and controls in a suitable instrument box.

Parts List

- 1 LM348N IC quad op amp
- 1 10 k dual ganged linear potentiometer
- 1 25 k dual ganged linear potentiometer
- 1 1 k resistor
- 2 1 meg ohm resistors
- 5 10 k resistors
- 1 15 k resistor
- 2 6.8 k resistors
- 2 0.1 uF capacitors
- 3 0.01 uF capacitors
- 1 0.033 uF capacitor
- 1 0.02 uF capacitor
- 1 1N4002 diode (any rectifier diode with a peak inverse voltage > 50 volts)

1 LED lamp (3 mm general purpose, suitable colour)
1 Switch, miniature, double pole, double throw (DPDT) Jaycar ST0310 or similar
1 Circuit board, blank 60 mm x 60 mm, or to suit own case
1 Vero board, cut down for IC mount
1 Case, 90 mm x 80 mm, or to choice

Hardware – grommet, ties, knobs, plugs and sockets for I/O (3 mm jack etc), power cable.

Testing

First check the BPSK signal is getting to your sound card with the power off, that is, the power switch is bypassing the receiver signal to your sound card, this will prove your basic audio connections. Then if all connections and the PCB are assembled correctly the unit should work.

Signals from the different amplifiers in the bandpass system are very low, you will have difficulty seeing these with an oscilloscope. I found an audio signal generator very helpful and there are plenty of these on the internet for free; choose one that you can sweep the audio over a range of, say, 900 to 1100 Hertz; white noise was also helpful. Useful tools to check the operation of the filter are your PSK waterfall and an audio visual analyser available free on the internet. When the filter is working correctly you should see a generally dark waterfall with a vertical lighter band, depending where the filter is tuned.

BPSK Bandpass Filter

Figure 2: The bandpass filter frequency response curve.

Operation

Once the filter operation is verified tune your radio to a BPSK band with signals, place the decoding cursor onto the desired station and verify some decoding with the filter power off. Switch the filter power on and tune the highlighted vertical area on the waterfall over your signal using the course and fine tuning controls on the filter; the decoding should be improved on a weak station especially if there are strong adjacent stations around. As was said earlier you may be able to copy a very low station but probably will not be able to communicate, he just will not hear you.

Conclusion

- This filter is suitable for home construction with a minimum of tools and should be quite cheap to construct.
- With the filter working a definite improvement should be achieved copying weak stations with strong adjacent stations within the BPSK band.
- The filter will not decode signals with a carrier greater than 100 Hertz.

The filter would make an ideal kit for distribution by a radio group or club.

Reference

http://projects.mestcs.com/audio_bandpass_filter.htm

WIA Annual Conference
Mildura, 25 – 27 May, 2012

Register online at http://www.wia.org.au/

VK6news HARG

Bill Rose VK6WJ
Publicity Manager

The HARG John Moyle Field Day HF station, set up at Alan Anderson Park, Bickley. Steve VK6IR is on the microphone, with Allan VK6AN and Jeff VK6JKR looking on.

The Hills Amateur Radio Group (HARG) participated in the John Moyle Field Day by setting up a 16 metre telemast in the middle of Alan Anderson Park in Walliston (OF87ax) and operated from 0900 to 2300 and from 0500 to 0900 (local). We made contacts up and down the bands and had a ball. Thanks to Steve VK6IR we had a ute-tray to use as the broadcast platform which handily supported his radio equipment and amplifier connected to several dipoles. We also operated a separate set on 2 m and 70 cm connected to a collinear on the top of the mast.

Camping was optional, but several members arrived on Friday afternoon and did not leave until the whole lot was packed up and back at the clubhouse. We had visits from more than a third of our members who provided moral and sustenance support and the Walliston Deli was around the corner supplying food and beverages for all and sundry.

We had visits from many locals, including Trish who is a local blogger taking notes and photos. She later brought along her grandson, who was dragged away from his Wii, and supplied us with some cold beverages as thanks for putting up with her. The local dog-obedience class dropped in as well as some drive-by amateurs who saw the commotion and wondered what was happening.

A special mention for John VK6FJON who provided catering - yummy kebabs, Alan VK6PWD who provided breakfast, Steve VK6IR who provided the mast, ute, and the contents of his shack, Meg VK6LUX who provided ice cream and figs and finally Richard VK6BMW who provided invaluable expertise, training and good cheer, not to mention charging and chairs – hi.

No doubt this event has taught us about some of the things we need to learn, both technical and logistical, when we have the opportunity to do this all again.

As I said, we had lots of visitors from around Kalamunda and we also had the following club members attend: Alan VK6PWD, Allan VK6AN, Jeff VK6JKR, John VK6FJON, John VK6JAT, Marty VK6RC, Meg VK6LUX, Jon VK6MAD, Onno VK6FLAB, Richard VK6BMW, Steve VK6CS and Steve VK6IR.

Our next foray onto the airwaves was for the CQ WW WPX contest on the weekend of March 24 and 25. For this contest we opened the club rooms for all of Saturday 24th and operated the club station, VK6AHR, from 8.00 am to 4.00 pm local time. I believe over 150 contacts were made. Club members in attendance were Allan VK6AN, Alan VK6PWD, John VK6FJON, Marty VK6RC, Richard VK6BMW, Onno VK6FLAB and Graham VK6RO.

By the time you read this we will have held our annual HARGFEST – Buy and Sell Day - at the clubrooms on Saturday 28th April. More on that next month.

Cheers.

VHF/UHF - An Expanding World

David Smith VK3HZ
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Weak Signal

Things are slowing down in March but there are still times of good propagation driven mostly by the presence of a well-located high-pressure cell.

One such time was the morning of March 10th when a high was located to the southwest of Victoria, producing strong conditions between northern Tasmania and the Adelaide area. Bill VK5ACY worked Joe VK7JG (5x9 barefoot) and John VK7XX (5x9). Peter VK5PJ reports that the VK7 WIA broadcast on the VK7RAA repeater was competing with their local repeater, wiping it out at times. Peter was also hearing the VK7RAE 70 cm beacon peaking at 5x5 with strong QSB, although no 70 cm contacts were reported.

Another year-round technique for long distance contacts on VHF/UHF is via aircraft enhancement. The regular AE net of a morning from about 0830 to 0900 AEST is still bubbling along. From Melbourne, contacts are regularly had into Sydney on 2 m and into Canberra on 2 m, 70 cm and 23 cm. Steve VK2ZT regularly works Jim VK3II on 2 m along the Sydney to Melbourne flight path. Barry VK3BJM has a good alignment with the Melbourne to Sydney flights with Ian VK1BG and they regularly make contact on 23 cm, albeit for a short period before the aircraft passes the hotspot. Activity is also high to the north of Sydney up along the coast. If you want to know where aircraft are located in real-time and how AE might work for a given path, a good first stop is *www.flightradar24.com* Peak AE will occur when the aircraft crosses the path between the two stations. The aircraft must be 'visible' (in an RF sense) to both ends.

Wally Green VK6WG SK

As reported in the previous issue of *AR*, on March 7th Wally Green VK6WG passed away at the age of 100. Wally was a pioneer of VHF/UHF in this country and has a long list of records and 'firsts' to his name. Regularly when the band was open across to VK6, Wally would be at the other end. After I worked him for the first time in 2003, I was surprised when told his age as he sounded like someone half that age. He will be sorely missed.

Analysis of two metre Es opening, 3 January, 2012

Roger VK2ZRH confesses to a mea culpa for an error in the April column under this heading.

On p.49, middle column, the paragraph beginning 'The IPS ionosonde at Canberra ...' needs to be replaced with the following:

The IPS ionosonde at Canberra is relatively close to the likely ionospheric reflection points at the western end of the paths. As Es clouds drift in westerly to north westerly directions at speeds ranging from about 70 metres/sec to 120 m/s in this region, the ionograms relating to the reflection points grouped over Victoria are earlier than the times of the contacts. The geographic spread of contacts indicated an extensive Es cloud (or cloud cluster). Such an extensive Es cloud drifting generally west at 75 m/s will pass the meridian of the Canberra 'sonde and take about another 90 minutes to pass the meridian through the westerly reflection point on the VK5BC-ZL2OK path. The contact occurred at about 0107 UT. The ionogram for 2338 UT (2 Jan), 89 minutes earlier, shows intense, spread Es traces, the base height at 94 km, and a top frequency (ftEs) of 15 MHz. The ionospheric 'split' at Canberra is 0.8 MHz, so the penetration frequency, foEs, is 14.2 MHz. As the contact was confirmed, it can be safely assumed that similar or sufficient conditions prevailed further east along the path, over the Tasman Sea.

The first two sentences of the paragraph that followed need to be replaced with this:

The Es layer at the time was 'crinkled' or 'rippled', providing the conditions for petit chordal hop, which dramatically raises the MUF [1, 2]. With foEs at 14.2 MHz, the electron density of the rippled Es layer was sufficient to support propagation with an MUF of about 162.8 MHz for the western hop on this occasion.

Attendees at GippsTech this year may question the blushing author.

Please send any Weak Signal reports to David VK3HZ at *vk3hz@wia.org.au*

Digital DX Modes

Rex Moncur VK7MO

FSK441

Welcome to Kirk VK2MER who is operational on FSK441 during the activity sessions.

PSK2k

PSK2k is a new mode for meteor scatter that has been developed by Klaus DJ5HG. Klaus has an article in DUBUS 1/2012 that explains the mode and how it works and gives references to URLs where it can be downloaded: *http://www.DJ5HG.de/PSK2k* Klaus puts forward advantages compared to FSK441 as higher speed, better sensitivity and forward error correction. To date few in VK has been able to get it to work effectively on meteor scatter although Arie VK3AMZ and Kevin VK4UH have noted that when it does decode, the error correction is very effective and produces fully accurate decodes. In updates as reported below, the first VK PSK2k QSOs have now been completed. Kevin describes his use of the mode as follows:

Once running it is VERY different to FSK441. First impression is that PSK2k needs 'more' to give a decode - either louder or longer than FSK441.

The other major difference is that you don't get the audible 'Bzzzzt' of a ping from the speaker. The sound you hear is little more than a 'hiss' and is very subtle and easy to miss.

I have found also that even my laptop can run PSK2k and WSJT in parallel, both decoding from the same Signalink interface so I can watch for either type of signal on the same frequency in separate windows. This may be useful in the future.

I have completed my first QSO on PSK2k over the weekend with VK4MIL although on tropo/AE not MS but at least I could see how the automated system works.

In an update Kevin reports:

After a number of successful QSOs with Colin VK4MIL using PSK2k via tropo, to get the feel of the program, a successful contact was made with Arie VK3AMZ in QF22FE via meteor scatter on 31 March 2012 at 1856 UTC - a path done many times before on FSK441. Several strong pings were heard although the usual characteristic bzzzzt sounds were absent. The program certainly works and the auto advance of the reports is interesting (this is a feature that automatically advances the reports from R to RRR and then 73 as the QSO progresses). Is this the future of MS activity in VK - time will tell!

PSK2k requires one to first load MatLab as set out on DJ5HG's web site and many stations have found it is very difficult to get operational. The problem seems to be that one must ensure that all relevant programs are in the same folder.

Arie VK3AMZ has commented:

Yes a very frustrating and clunky program to get going. I'm spurred on by the fact that it is new and may be superior to FSK441 (I doubt it) but I won't know unless I've reviewed it.

I've now upgraded to version 5.4 (from 5.1) maybe that is my issue? I can't (but I think I can?) understand why I decoded Kevin first time I fired it up for a session and then nothing since. I believe I was decoding in receive mode.... which is an open gate as such. As soon as I selected his callsign for replying, that's when it went pear shape?

Congrats on at least confirming that it's possible for two stations to talk to one another but I don't think it has much of a future (I could be wrong?), simply because you can't run multiple QSOs simultaneously.

Unless it is an order of magnitude better than FSK441, I'd give it a thumbs down.

Update: on the 30th March 2012, I completed PSK2k QSOs with VK4UH and VK2XN. Reports sent to both stations and reciprocated were 0 dB. I found there is no ambiguity with regard to decoding PSK2k signals as can be the case with FSK441. I see this as this mode's prime advantage. I do miss the partial or corrupted decode presentation that is typical of FSK441, this at least gives an indication of the flow of a QSO. PSK2k is far more 'digital' in that respect, it's either there or not at all. My only other observation is that it doesn't afford multiple QSOs at the same time. This is a disadvantage when the bulk of VK meteor scatter activity is for an hour or so on a Saturday and Sunday morning. I think the social flavour of these activity sessions would suffer if we confined our QSOs to 'one at a time'.

As a final note, PSK2k is incredibly CPU intensive, my old P4, 2.4 GHz processor struggles when 8k input sampling rate is selected, and at 16k the program begins to misbehave. So all those old PCs that worked without issues running FSK441 will struggle with PSK2k (a sign of the times!).

It is probably early days for PSK2k but as can be seen from the above comments it does not seem to work nearly as well as FSK441. If others have more success, please send reports.

New 24 GHz Digital record

On 13 March 2012, David VK3HZ at Mt Liptrap in Victoria worked Rex VK7MO, assisted by Joe VK7JG, near Georgetown in Tasmania using JT65c via aircraft scatter over a 255 km non-line-of-sight path on 24 GHz. The idea behind this work was that by using aircraft scatter the majority of the path is at high altitude where the levels of water vapour are lower and thus absorption is decreased. The absorption loss was calculated for this path at the surface at 65 dB compared to 9 dB for the aircraft scatter path. There was no evidence of direct signals but weak aircraft scatter was present on most aircraft crossings with a best signal of -21 dB. A full report of this work as at: *http://www.vk3hz.net/microwave/Aircraft_Scatter_Contact_24_GHz.pdf*

Please send any Digital DX Modes reports to Rex VK7MO at *rmoncur@bigpond.net.au*

The Magic Band – 6 m DX

Brian Cleland VK5BC

March was highlighted by great contacts by Bob ZL1RS and Brian VK4DDC long path into EA8 Canary Islands. On the morning of 11th March Bob ZL1RS worked EA8CK on CW over a distance of over 18,800 km. Then on 18th March Bob reported hearing the XE1RCS beacon and working EA8CK and EA8AK both CW 559. This time though Brian VK4DDC in the Gold Coast also worked EA8AK long path on CW 559 over a distance of approx. 21,000 km. Well done Bob and Brian.

Phil TI7/N5BEK in Costa Rica was also worked on several occasions during March:

8th by Wade VK4WM in Hervey Bay, CW.
12th by Brian VK4DDC, CW.
16th by Scott VK4CZ in Brisbane, CW and SSB and
19th by Frank VK7DX in northern VK7, CW.

JAs were worked on most afternoons in March from all areas of VK4. Wayne VK4WDM in Townsville reported the band has been open to JA, BA, BV and HL most days starting about 0300Z and continuing well into the night. Most openings were characterised by unstable signals and marked QSB. Weak American and probably Mexican or central American voices were heard around 2330Z on the 5th but no QSOs resulted. The biggest JA opening occurred from mid-afternoon on the 31st with most areas represented with very strong signals and KH7Y was heard on CW. The northern openings extended south down the east coast on some days and John VK7XX reporting that on March 11th, between 0345 and 0422 UTC working 44 Japan stations in all call areas except JA4 and South Korean stations DS2KGJ and 6K2FBA with a huge pileup on 50.140.

Most days the northern TEP openings missed VK5, the exception being the 19th and 31st when JAs were worked in the afternoon TEP. Willem DU7/PA0HIP was also worked from VK5 the evening of the 13th. Most days though the northern openings did move from VK4 to VK6 with JAs being worked on many afternoons as far south as Perth.

Some good 'E' openings occurred during the month and they were interesting as very short skip was experienced. Colin VK5DK reports on a very rare short skip opening from Mt Gambier to Melbourne:

Since the beginning of March, there have been a few openings on 50 MHz to the southeast of South Australia with a brief opening to VK4 with a contact to Errol VK4KR on the 5th of March with marginal SSB signals sent and received 5 x 3 both ways.

There were no openings observed at this QTH until Sunday 11th of March when at 0120 UTC VK3AKC was contacted with S9 SSB signals both ways. Working VK3 stations from Mt Gambier on Sporadic E is very rare, particularly with such strong signals. Over the next two and a half hours I was able

Photo 1: The assembled antennas on their mast and ready for some six metre action.

Photo 2: Bob ZL1RS, on Norfolk, busy assembling his six metre antennas.

to work a total of twelve stations - in order of contact were VK3AKC, VK2BX, VK3AKK, VK3HY, VK1DJA, VK3MY, VK3AUQ/P, VK3DUT, VK2BHO, VK3ADR, VK5PO and finishing with VK6NS; also heard but no contact was VK5BC/P. Later that evening at 1030 UTC I had my first contacts into China with contacts with BG6CJR followed by BA4SI at 1123 UTC and two contacts into Japan, with JA3KVT at 1128 UTC and JA6UOU at 1140 UTC; Gary VK5JR also worked BG6CJR, JA3KVT and JA6UOU during the opening to the north.

A report from Garry VK5ZK stated that when I was working the Chinese and Japanese stations there was no sign of their signals in Goolwa, although Garry was able to hear my signal.

Since then there has not been any contacts on Sporadic E or F2 contacts from this QTH although I have been keeping a close watch on the band and the VK Logger.

This was a good test for my newly constructed 50 MHz PA unit which has passed the operating test with good results and reports to date are very favourable regarding audio quality.

The opening experienced by Colin on the 11th extended from VK6 to ZL over a few hours with contacts being completed between VK6, VK5, VK3 and ZL. Again on the morning of the 18th another good short skip opening from VK3 to VK5.

Bob ZL1RS has been operating portable from Norfolk Island using the callsign VK9N/ZL1RS since 28th March and will be operational there until 8th April. Bob's portable antenna setup comprises five over five Yagis on a 13.5 metre portable mast. See photos 1 and 2.

Once set up, Bob had immediate success on the 28/29th March with over 70 stations worked in VE7 and the NW USA. There was nothing further south except one or two W6 stations and W5UN. TI7/N5BEK also heard.

The KH6 beacons were S9 at around 0730 UTC on the 29th and Fred KH7Y was very loud and Bob worked a few JAs and one DU. A few stations from NA have looked for Bob's JT65A CQs on 50.190 at moon rise and N6KK and K7CW have managed 'direct' digital QSOs when six metres appeared 'closed'. Bob reports that, obviously, the band has been marginally open with the sensitivity of JT65A making the difference. Bob has also been completing many EME contacts.

Please send any six metre information to Brian VK5BC at *briancleland@bigpond.com*

GippsTech 2012

It is almost that time again: GippsTech 2012 will be happening on the weekend of 7 and 8 July, at Monash University Gippsland Campus in Churchill, Victoria, about 170 km east of Melbourne.

GippsTech has a well-recognised reputation as a premier amateur radio technical conference, with its focus primarily on techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. Even if you are new to these areas of amateur radio, you will learn a great deal of information during the weekend.

A Partner's Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Details of the conference are available from the Eastern Zone Amateur Radio Club website: ***http://www.vk3bez.org/***

Registration forms will be available in the near future.

Those wishing to present at this year's conference should contact the Chair as soon as possible:

vk3pf@wia.org.au

Peter VK3PF
Conference Chair

On sporadic E VHF propagation and solving a mystery about maximum usable frequencies – Part 2

Roger Harrison VK2ZRH

Petit chordal hop VHF propagation via spread Es

As outlined earlier, the spreading of Es traces on ionograms likely arises from crinkles, ripples or other structures in the Es layer, which reflect the 'sonde transmitter pulses from varying ranges at oblique angles, as well as from directly overhead, perhaps at different heights. The structure of Es layers has been the subject of considerable scientific research and discussion over decades, [e.g. 11, 12, 13, 14, 15, 16]. It seems that wind shear turbulence in the neutral atmosphere modulates the ionisation in complex ways. While 'structured' Es is likely to take a number of forms, From and Whitehead [12] and Bernhardt [15, 16] describe layers having "crinkles" or being "rippled", or having "clumps" of greater electron density within the cloud. Likely models of Es structures are illustrated in Figure 10. It appears that Es ripples, as in example (1) and A, are of small scale, perhaps 1-5 km crest-to-crest, with vertical amplitudes very much less than that. Other likely periodic structures include lobes on the underside of Es clouds (as in example (3) and B) of up to 10 km lobe-to-lobe and around 1 km deep, or elliptical structures some 5-10 km long by about 1 km deep.

The proposed principle of petit chordal hop Es VHF propagation is illustrated in Figure 11. A raypath from a transmitter at A, at elevation angle (e), meets a ripple in the Es layer at a small angle (c) to a tangent with an upward tilt of the ripple at P1. If the electron density is sufficient to refract the raypath such that it emerges horizontally, it will then travel to meet the next crest of the ripple at P2, where it will be deflected in a reciprocal manner. The upward tilt of the ripple improves the raypath's obliquity to the Es layer and thus the path MUF. The question is, by how much? Would you believe – nearly double!

Erratum: Part 1 April 2012, page 43:

Equation 1.1 was incorrect. The correct equation is:

$$(i)_{MAX} = \arcsin\left[\frac{R}{(R + h)}\right] \quad (1.1)$$

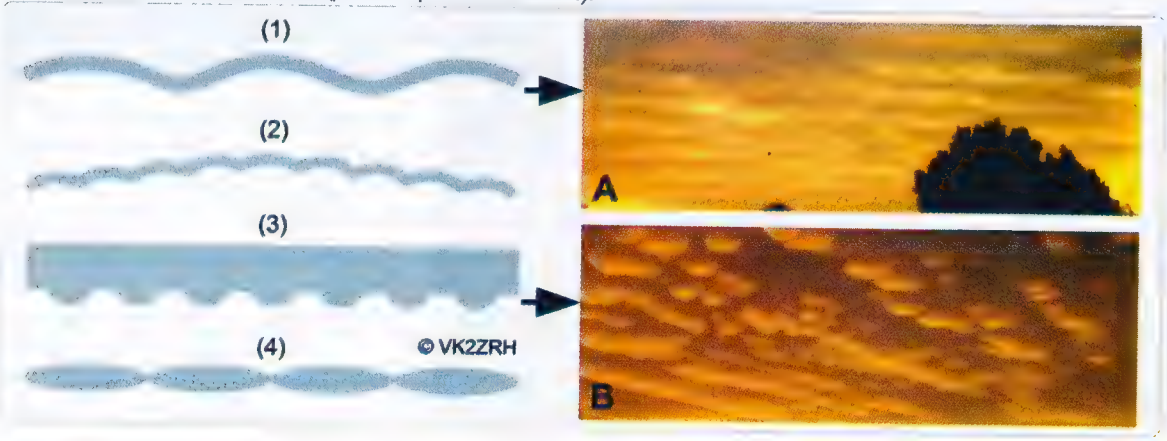
Also, in the first line of the right hand column on page 43, there is a typographical error. The paragraph should read:

When (e) is 0^0, this sets the maximum (theoretical) one-hop range or path distance, expressed as:

$$D_{MAX} = \sqrt{8Rh} \quad (1.2)$$

A corrected version of Part 1 has been posted to the April 2012 page of the WIA web site: *http://www.wia.org.au/members/armag/2012/april/*

Figure 10: At left: some likely models for Es structures (seen in profile), based on [12], [15] and [16]. Turbulent wind shear structures are the cause of spread Es on ionograms. (1) Rippled layer. (2) Ripples on a long wave. (3) Lobes on the underside of a layer. (4) Clumping produced by Kelvin-Helmholtz turbulence. At right: images of atmospheric clouds produced by wind shear turbulence. A – rippled wave cloud formation (pic: author). B – mammatus cloud formation (pic: Wikipedia commons).



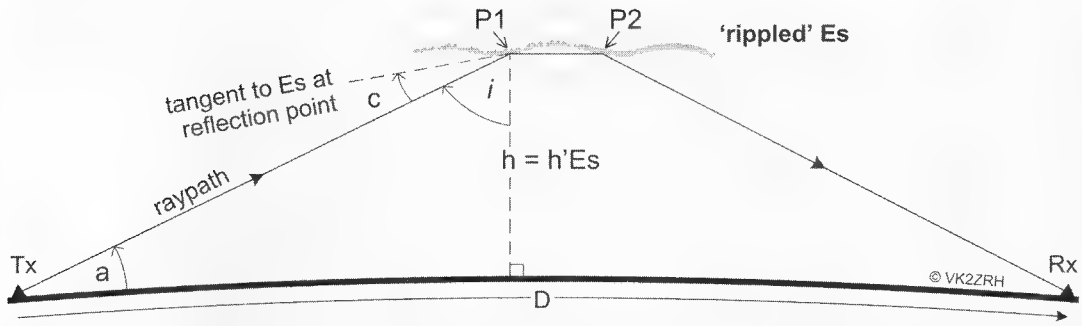


*Figure 11: The general geometry of **petit chordal hop** propagation via a rippled (or structured) Es layer. The raypath is refracted to the horizontal at P1 via a suitable tilt in the Es layer, then refracted back to ground at P2 via a reciprocal tilt. Path MUF rises significantly. The distance from P1 to P2 may range from 1 km to perhaps 10 km.*

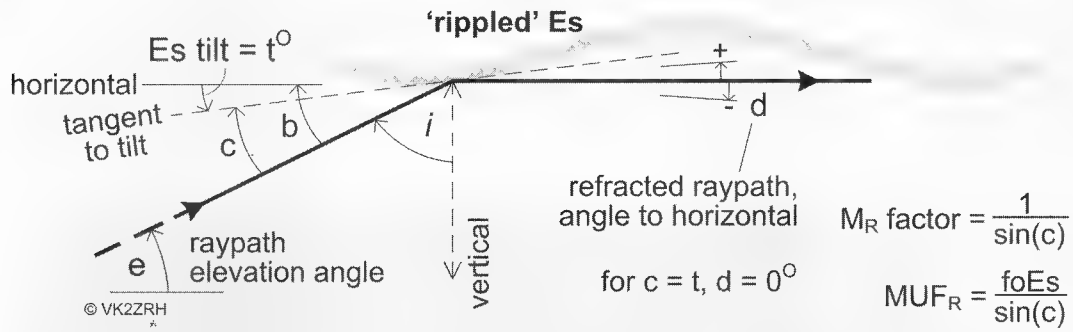


Figure 12: Close up of the geometry for propagation via rippled Es. The refracted raypath will be horizontal when angle (c) equals the tilt angle (t), yielding angle (d) of zero degrees. The ripples do not need to be orthogonal to the propagation path. On an ionogram, h'Es will be the lower height of the crests and the Es trace will be spread, as in Figure 4. The impact is to almost double the MUF.

Figure 12 shows a close up of the refraction geometry. The incident signal will reach the Es layer over a range of raypath elevation angles. If one raypath strikes a ripple at a tangent such that the tilt angle (t) equals the raypath-to-tangent angle (c), the refracted raypath will be horizontal (ie. angle (d) = 0°).

The M factor, which I have called the "M_R factor", is determined by angle (c) as is the MUF, now called MUF_R. Angle (c) will be half that of angle (b), which determined the M factor and MUF in the plane Es case. **The impact of this is that the M factor and thus the MUF are very nearly doubled for the range of small angles involved.** For example, if angle (b) is 10° for the plane Es case, then angle (c) for the spread Es case is 5°. Sin(10) divided by sin (5) is 1.9924.

The equations for the M factor and MUF now become:

$$M_R \text{ factor} = \frac{1}{\sin(c)} \qquad (2.7)$$

$$MUF_R = \frac{foEs}{\sin(c)} \qquad (2.8)$$

The geometry establishes a critical angle for the Es tilt angle (t) related to the raypath elevation angle (e). For a raypath elevation angle very slightly greater, it will meet a slightly smaller tilt angle (closer to the nose of the crest) and the reflected raypath will emerge at an angle below the horizontal. A raypath with (e) very slightly smaller will meet a slightly greater tilt angle (further to the right of the crest's nose) and the reflected raypath will emerge above the horizontal.

For a raypath that strikes the right hand crest just past the nose, the elevation angle will be lower and it will need a slightly smaller Es tilt angle to be reflected horizontally. Likewise, a raypath that strikes a crest to the left will be at a higher elevation angle and will find a slightly greater Es tilt angle to be reflected horizontally.

The array of wave-like ripples or other periodic structures in the Es will act on an incident wavefront in a similar way to how an optical diffraction grating affects monochromatic light. The emergent wavefront breaks into alternate areas of *constructive* and *destructive* wave interference, yielding footprints on the ground of high signal strength in some places and low strength or no signal in others. This is sometimes called the "flashlight effect".

It torments operators who can hear nearby stations working DX that they can't hear! There can be a number of reasons for this effect with Es, the foregoing is just one.

For petit chordal hop via spread Es, the variation of the M_R factor with elevation angle and h'Es is illustrated in Figure 13. Compare this to Figure 6.

One last question arises: if the ripples are shallow, will they produce the tilt angles in the Es required to support petit chordal hop? Yes! If the ripples are sinusoidal in shape (or roughly so), with a depth of at least 5% of the crest-crest distance, the tilt angle will range from 0° at the lower crest to 5.7° maximum at half depth, which is sufficient for paths having elevation angles up to 6°, 5°, 4°, and 3° when h'Es is, respectively, at 90, 100, 110 and 120 km. Ripples with a crest-to-crest scale of 1 km may be less than 100 m deep; at 3 km crest-to-crest, only 150 m deep. Greater depth/crest-crest ratios provide a greater range of angles. The range of tilt angles required for petit chordal hop extend from about 4.8° up to about 7.4° for h'Es ranging from 90 km to 120 km.

If the spread Es consists of structures as in Figure 10 (3) and (4), their cross-sections may range from roughly circular to elliptical and thus present a suitable range of tilts facing the ground. Figure 14 illustrates a plan view of raypaths supported by such structures. Propagation by petit chordal hop from wave-like ripples in Es would not be supported where raypaths were parallel, or nearly so, to the waves. Lobular Es structures will support petit chordal hop in any direction.

Table 3 (like Table 2) illustrates the MUFs achievable for a variety of ionospheric and path parameters under spread Es conditions. Values of h'Es and path lengths (D) are generally typical. A column listing foEs values for a 98 MHz MUF is included as for Table 2. For Es propagation at 144.5 MHz, note that the required foEs ranges between only 12.2 MHz and 16.7 MHz! It is clear from the foregoing that the MUF can potentially reach ~350 MHz when foEs reaches 30 MHz, but we already know that such occasions are rare.

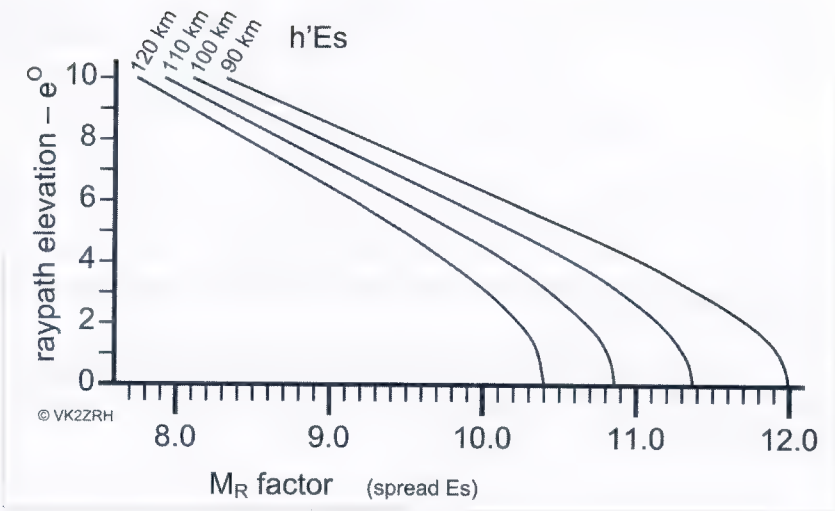


Figure 13: Under the right spread Es conditions, leading to petit chordal hop propagation, the M factor (M_R factor here) increases dramatically, almost doubling. Compare this to Figure 6.

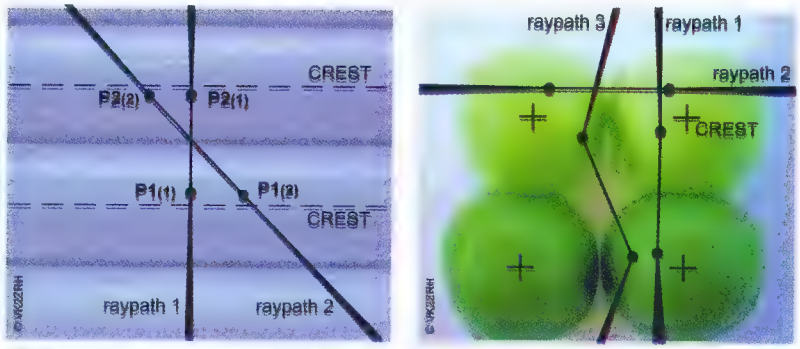


Figure 14: I have used shaped plastic to model these plan views of petit chordal hop propagation raypaths as if seen from the ground. At left is the rippled Es case, as in Figure 10(1). At right, lobe ('mammatus') structures as in Figure 10 (3). Rippled Es will not support petit chordal hop where raypaths are parallel to the crests and, as raypaths approach paralleling the crests, the less certain it becomes that petit chordal hop will be supported. Lobe structures in the Es layer will support raypaths in any direction and likely account for non-great circle path propagation.

Two case studies of petit chordal hop Es propagation

50 MHz: To demonstrate the validity of the petit chordal hop model, I examined VK Logger 6 m spots for the VK7RAE-VK4CZ path (Figure 8) and looked for instances where the ionogram closest in time to a spot had an foEs value well below that required for classical (or plane) Es propagation. It was not difficult to find one. Indeed, there were many over the past few years. VK4CZ spotted the VK7RAE beacon at 0255 UTC on 29/12/10, giving a 569 report. Figure 15 is the Canberra ionogram for 0253 UTC on that day. With h'Es of 101 km, the raypath elevation angle (e) is 3.2°, (*i*) is 79.38° and (b) 10.62°. The classical M factor would be 5.42 (eq. 2.6) and, with an foEs of 4.7 MHz, the MUF (eq. 2.5) would be about 25.4 MHz.

h'Es	(e)	(t)	D (km) approx.	M_R factor	MUF_R for foEs of 5 MHz	20 MHz	foEs for MUF ≥ (MHz) 50.5	98.0	144.5
90 km	1	4.815	1920	11.91	59.55	238.2	4.3	8.3	12.2
	2	4.89	1731	11.73	58.65	234.6	4.4	8.4	12.3
	4	5.185	1417	11.07	55.35	221.4	4.6	8.9	13.1
	6	5.64	1175	10.18	50.9	203.6	5.0	9.7	14.2
	8	6.225	991	9.22	46.1	184.4	5.5	10.7	15.7
100 km	1	5.065	2031	11.33	56.65	226.6	4.5	8.7	12.8
	2	5.14	1842	11.16	55.8	223.2	4.6	8.8	13.0
	4	5.42	1522	10.59	52.95	211.8	4.8	9.3	13.7
	6	5.86	1273	9.8	49	196.0	5.2	10.0	14.8
	8	6.425	1080	8.94	44.7	178.8	5.7	11.0	16.2
110 km	1	5.31	2140	10.8	54	216	4.7	9.1	13.4
	2	5.38	1949	10.67	53.35	213.4	4.8	9.2	13.6
	4	5.645	1622	10.17	50.85	203.4	5.0	9.7	14.3
	6	6.07	1366	9.46	47.3	189.2	5.4	10.4	15.3
	8	6.615	1164	8.68	43.4	173.6	5.9	11.3	16.7

Table 3: MUFs achievable for petit chordal hop Es for common path geometry parameters and two indicative values of foEs, plus foEs values required for propagation on 6 m, the FM BC band and 2 m. Note the values of foEs required to support 2 m Es propagation compared with those in Table 2.

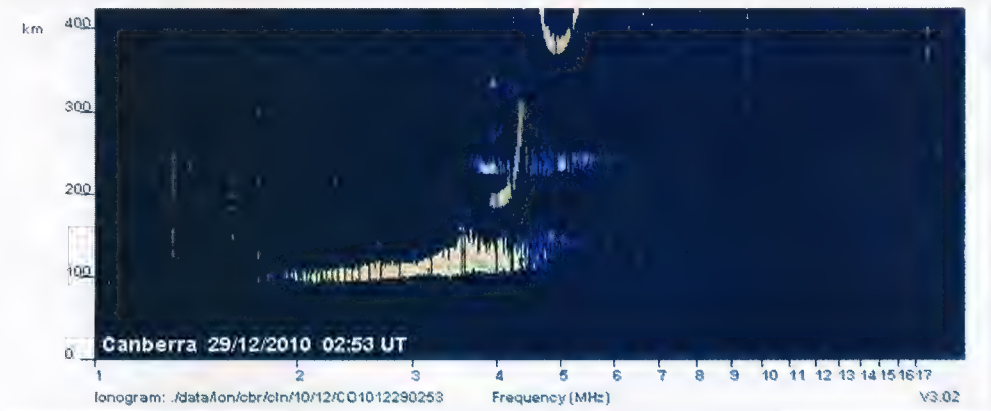


Figure 15: Ionogram relating to VK7RAE-VK4CZ spot of 29/12/2010 at 0255. Note the distinct Es spreading; ftEs = 5.5 MHz (foEs = 4.7 MHz) and h'Es = 101 km. Path length is 1648.7 km. The path MUF was calculated to be 50.8 MHz!

With spread Es, the VK7RAE raypath would need to find an Es tilt angle (t) of half 10.62° = 5.31°. **Now, the M_R factor is 10.81 (eq. 2.7) and thus the MUF (eq. 2.8) is 50.8 MHz!**

144 MHz: As before, I trawled VK Logger 2 m spots for the VK4-VK7 path, seeking instances where the ionogram closest in time to a spot had an foEs value well below that required for classical Es propagation. Doug VK4OE, in Brisbane, spotted a contact with Karl VK7HDX in Launceston on 10/01/2008 at 0533 UTC, on 144.13 MHz SSB, giving a 52 report.

Figure 16 shows the path, which reveals the mid-point (PoR) within the Sydney ionosonde's view.

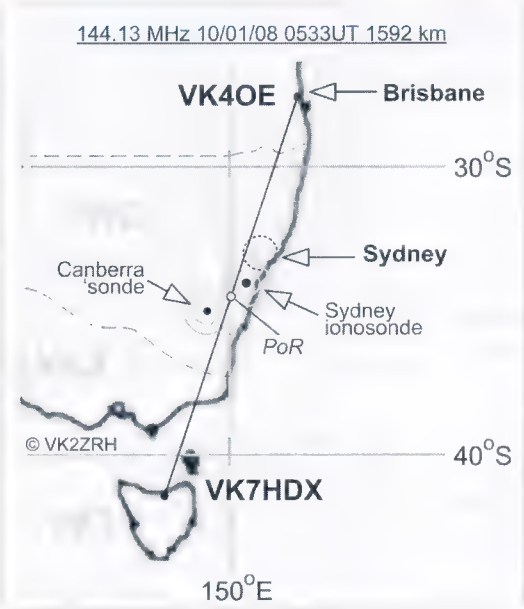


Figure 16: Path for the VK4OE-VK7HDX 2 m SSB contact of 10/01/2008, showing the relationship to the Canberra and Sydney ionosonde views. Path length is 1592 km. The PoR is within the Sydney 'sonde's view.

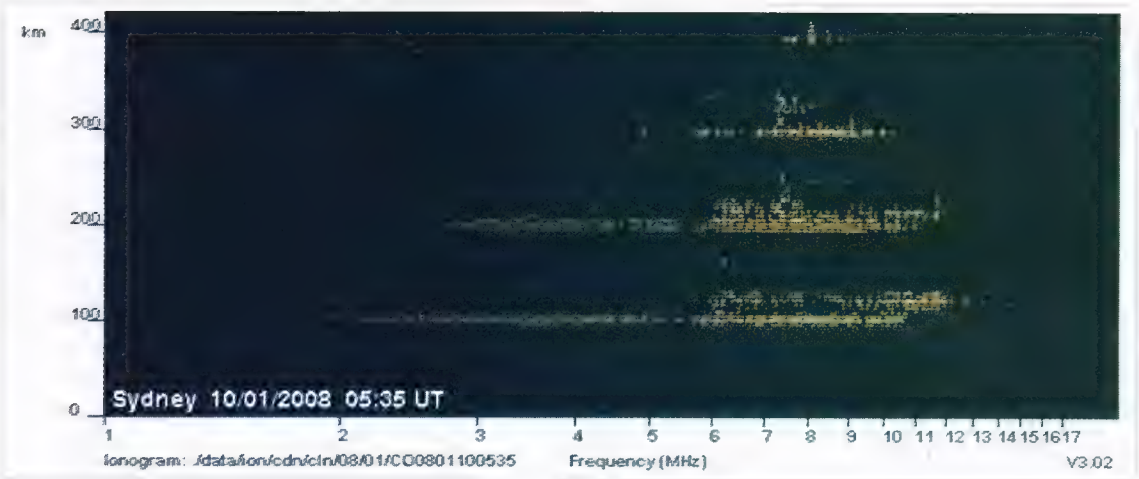


Figure 17: Ionogram relating to the VK4OE-VK7HDX contact at 0533 UTC on 10/01/2008. h'Es is 98 km. ftEs is 14.5 MHz, so foEs is 14.5 – 0.8 = 13.7 MHz. The E, F1 and F2 layers are fully blanketed and the Es shows spreading. This ionogram could be interpreted in several different ways, but the fact that it shows spread Es is sufficient for the purpose in this case.

Figure 17 is the Sydney ionogram for 0535 UTC on the day. With h'Es of 98 km, the raypath elevation angle (e) is 3.4°, (*i*) is 79.46° and (b) is 10.54°. In this case, the classical M factor would be 5.47 and the related MUF almost 75 MHz. With spread Es, the raypath would need to find an Es tilt angle (t) of half 10.54° = 5.27°. **Now, the M_R factor is 10.89 and thus the MUF is 149.16 MHz!**

In relating reported contacts to ionograms at or near paths' mid-points, I have found that spread Es is more the norm than the exception. **I can conclude that, for a given path, the sporadic E MUF depends on three things:**

(a) the height of the Es layer (h'Es),
(b) the peak electron density (foEs) and
(c) the presence or absence of spread Es at the path mid-point.

However, as spread Es can arise from a variety of structural morphologies in an Es layer, for petit chordal hop VHF propagation, spread Es is a necessary but not sufficient condition of itself. The spread Es needs to arise from ripples or other favourable periodic structures that present a series of small tilts in the vicinity of the propagation path mid-point.

A 2003 paper by Grassman and Langenohl [17], on long distance propagation paths at 144 MHz, provides ionograms relating to the paths of many reported single-hop and two-hop Es contacts involving the Canary Isles, the Iberian Peninsula and Central Europe. The ionograms are from 'sondes at Roquetes (north-east Spain) and Huelva (south-west Spain). Both ionograms show intense, spread Es with ftEs at 13.6 MHz in each case. This implies an foEs of 12.9 MHz, which the auto-scaling correctly scales in one case (Roquetes), but the other incorrectly scales foEs at 9.9 MHz. The authors reject the simple (classical) ionospheric model and other suggested models, such as cloud-to-cloud skip or Pederson ray propagation, but do not advance a model for the ionospheric refraction geometry. It seems to me that petit chordal hop available via the spread Es at each general area of reflection would adequately explain the propagation model for the great 144 MHz DX opening of 20 May, 2003.

The Heide Model of Es reflection geometry

In the German VHF-microwave journal DUBUS No.4 2010 [18], Klaus von der Heide DJ5HG proposed an explanation for 144 MHz Es propagation in which the wave is 'captured' within the Es layer if it is bent (or curved) such that the quotient of bending divided by the layer thickness (b/d) lies between 1.5 and 4.0, and that the value of foEs is between 12 MHz and 16 MHz.

This model improves the raypath's obliquity to the Es layer and thus the path MUF and depends on the electron density rising linearly from the base of the layer to the top. However, I think that the conditions Dr Heide proposes for capturing a wave at 144 MHz are difficult to achieve in nature, if not impossible. Firstly, the electron density gradient in a plane Es layer does not appear to vary linearly, as Dr Heide assumed. The electron density reaches a sharp peak, sometimes at half the layer thickness, and sometimes closer to the base [19, 20]. In ionospheric science, the profile of electron density in an Es layer, from base to peak, is taken to be quasi-parabolic [21], for which modelling and real world results agree.

Secondly, Dr Heide calculates that a value for foEs of only 2.5 MHz is necessary for 144 MHz waves to be captured inside the layer. For the VK4-VK7 paths, which pass through the circles of view of the

Sydney and Canberra ionosondes, I have trawled many, many VK Logger 144 MHz spots since January, 2008, but cannot find a single instance of such a low foEs coincident with 2 m propagation.

Layer trapping VHF Es propagation

A 2 m opening between VK3 and southern VK4, in January, 2006, showed some peculiar characteristics. Path lengths ranged from 1750 to 1950 km. No short-skip 6 m propagation was reported at the time. Short-skip 6 m signals are often a tell-tale indicator for 2 m openings [6]. However, reception of the 28 MHz VK2RSY beacon located NW of Sydney was reported in Melbourne (VK3) at the time (path of ~880 km).

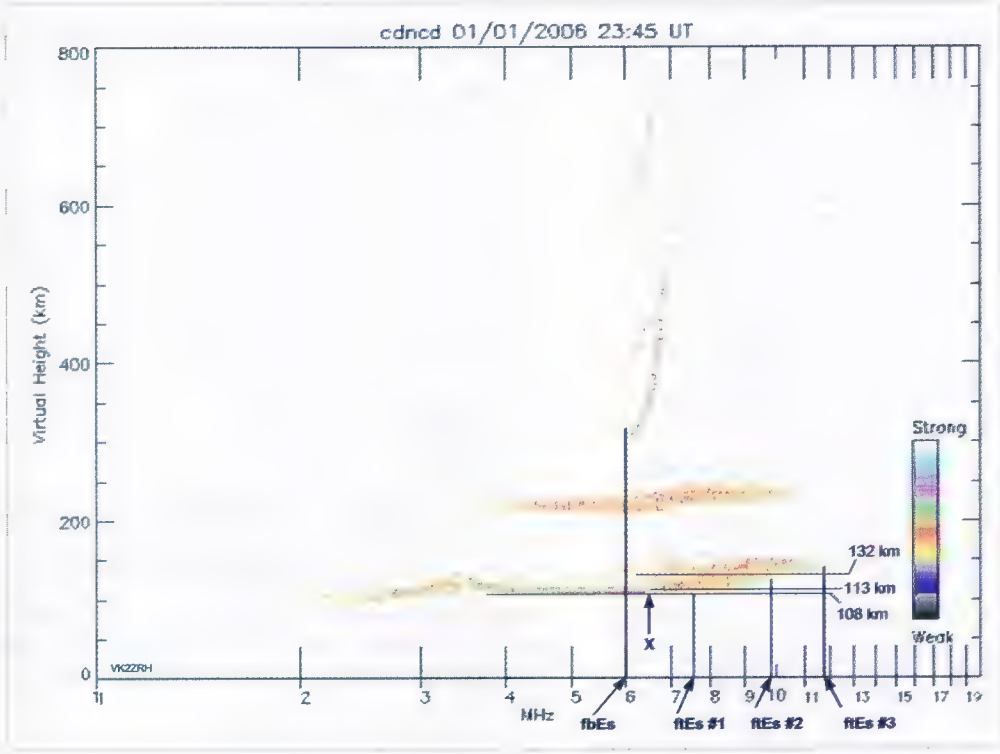


Figure 18: Sydney ionogram for 2345 UTC on 1/01/2006, showing multi-layer Es that may have 'trapped' 2 m signals between them, supporting contacts over 1750-1950 km at the time. Short-skip propagation at 6 m was not evident at the time, but it was for 10 m. An foEs of 6.7 MHz for the lowest layer (108 km) meant that the classical MUF only reached about 40 MHz.

With tropospheric refraction ruled out on the basis of signal characteristics and a negative Hepburn (tropospheric refraction) indication, I examined the sequence of IPS ionograms for the period spanning the signal reports, from 2330 to 2350 UTC. The terminals of the N-S paths indicated that the mid-points were close to the latitude of the Sydney ionosonde. The ionograms showed that a multi-layer structure had developed, with two closely spaced layers at 108 km and 113 km; see Figure 18.

Analysis of the ionogram for 2345 UTC shows the F-layer is blanketed at 6 MHz, while the Es layer at 108 km blankets the 113 km layer up to about 6.5 MHz (point X), after which some spreading of the 113 km layer is evident. Another Es return is seen at 132 km. From the sequence of ionograms, this turns out to be an echo from another Es patch at an oblique angle, moving horizontally. Three values for ftEs are identified, of 7.5, 9.9 and 11.8 MHz. For the 108 and 113 km layers, foEs values are 6.7 MHz and 9.1 MHz, respectively, which means the electron density of the layer at 113 km was greater than the one below.

The path lengths of 1950 km and 1750 km mean raypath elevation angles to the 108 km layer ranged between 1.9° and 3°. The plane Es MUF for a 1950 km path would be 40.6 MHz, while for a 1750 km path, it would be 39.7 MHz.

My proposition is this: an incident signal at 144 MHz would be partly refracted by the lowest (108 km) Es layer and then continue to the Es layer above (113 km), meeting it at a grazing angle, to be refracted back towards the 108 km layer, in turn reaching it at a grazing angle, to then be refracted back toward the upper layer and so on, the signal being 'trapped' or 'guided' between the layers for a distance before exiting the pair of Es layers some distance later or upon meeting some discontinuity that directs a raypath towards the ground.

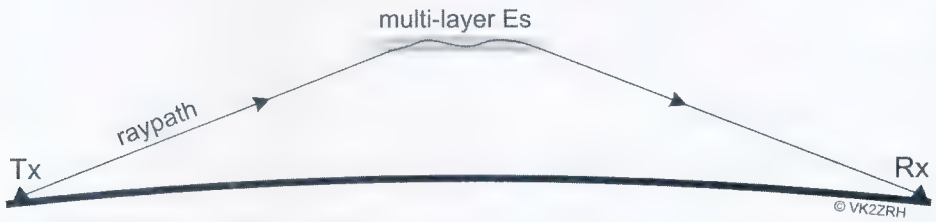


Figure 19: The principle of 'layer trapping' VHF propagation. The grazing angles of the raypath trapped between the layers provides a higher MUF than the lower layer could support.

Figure 19 illustrates the principle. Once the incident signal penetrates the lower layer, and with a grazing angle of just less than 3° between the raypath and each Es layer, the calculated MUF in this instance would have been above 148 MHz. Multi-layer Es is not uncommon, being reported many times over decades in rocket observations of Es [19, 20, 22]. Figure 20 shows a relatively recent rocket sounding (2005), where two thin layers 2 km apart were observed over Japan [22].

As layer trapping propagation excludes short-skip 6 m propagation while at the same time supporting 2 m propagation, this may act as a tell-tale for observant operators (provided 6 m stations are on the air). If multi-layer Es extends over a large geographical extent, path lengths would be extended well beyond the classical maximum single-hop skip range.

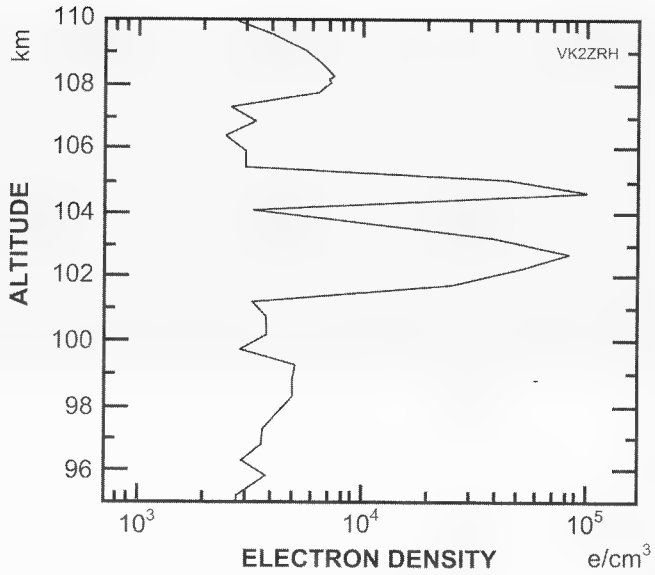


Figure 20: Multi-layer Es from a rocket sounding [22]. The layer peaks here are separated by 2 km, the lower layer being 2.5 km thick, the upper one being 1.5 km thick with slightly higher electron density.

Epilogue

The case studies presented are not "singular" examples. I trawled the VK Logger History database from January, 2008 to January, 2011, extracting 6 m and 2 m spots where path midpoints are within the view of the Sydney or Canberra ionosondes. There are many, many spots that are clearly supported by this propagation model as the ionograms show spread Es, but foEs values lower than the classical propagation model requires. I limited my search to the January, 2008 – January, 2011 period as there is currently online access to the Sydney and Canberra ionograms for these years. Anyone can repeat my observations for themselves.

Under some circumstances, spread Es may support petit chordal hop propagation over considerable distances, further than the maximum single-hop skip range. Small-scale ripples on a long wave of, say, 300+ km extent, as illustrated in Figure 10 (2), could create a kind of "whispering gallery". An incident signal meeting the crest of a ripple at the base of a long wave will be deflected with some raypaths emerging above the horizon, which are then able to reach the next crest of a ripple at a slightly higher altitude, and so on, following the curve of the long wave, eventually returning towards ground when the long wave curves downward.

Layer trapping has the potential to extend MUFs beyond 350 MHz. It may have been involved in the few reports of 220 MHz Es propagation in North America. Anecdotal evidence from VK operators (reported at GippsTech 2007[6]) suggests one-way signals have been observed on 432 MHz during an intense 144 MHz opening. Remember that, in the past, 2 m Es propagation was not thought possible.

I am indebted to Terry Bullet [23] for help with the Figure 18 ionogram analysis and beneficial comments on the propagation models.

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BRISBANE AMATEUR RADIO CLUB

BARCFEST 2012

Saturday 26th May 2012

This year's BARCFEST will be at Mt Gravatt Showgrounds, Logan Road, Mt Gravatt.

Doors open 9.30 am. Admission $7.00.

Food and drinks available at reasonable prices.

Hope to see you there on **26th May**.

Contact Les VK4SO ph *0411 729 642* or email: *parkerlf@optusnet.com.au*

Please note the change of date for this year only.

CENTENARY 1912 ~ 2012 celebrating VK100WIQ - The formation of the Wireless Institute in Queensland

Michael J. Charteris VK4QS, Chairman, Queensland Centenary Committee, WIA

Two years ago, in the year 2010, we as Australian amateur radio operators celebrated a world first, by way of the fact that our national body, the Wireless Institute of Australia, turned 100 years of age. Such a milestone predated the formation of both the ARRL in the US and the RSGB in the UK. Thus, Australia was the vanguard of organised amateur radio in the entire world. During 2010, from what I heard on air, Australian amateurs embraced the Centenary of the WIA with gusto. Each night the bands were abuzz with all and sundry striving to contact the special Centenary station VK100WIA.

This year 2012 sees the Centenary of the formation of the Wireless Institute in the State of Queensland, the WIQ. As such, we in Queensland plan to celebrate over the course of the rest of the year with various club-based special events and activities. Our Centenary call sign VK100WIQ will be operational from June 1st 2012 through to July 31st 2012, by way of a roster system for all the Queensland radio clubs to apply for a three day block.

Our Centenary Committee is well founded with the following amateurs at its helm: Ewan McLeod VK4ERM, WIA Director Trent Sampson VK4TS, WIA Director Al Shannon VK4SN, QAC Don Wilschefski VK4BY, QAC Kevin Johnson VK4UH and myself QAC Mike Charteris VK4QS. Between us, we hope to encourage and participate in as many of the Centenary events being hosted by various Radio clubs throughout this great State of ours.

The origins of the celebration stem from a meeting organised by one Mr Sydney Victor Colville, in the year 1912, with the view to form the Wireless Institute in Queensland. To quote the WIA Book, Volume 1, 'Wireless Institute of Queensland formed by S.V. Colville (XQF), who later became the Secretary and organizer'.

For those unfamiliar with the history of the QWI, or WIQ, and what later became the WIAQ, a new website has been developed to give an overview of the men, the names and the places that saw the Wireless Institute develop in Queensland. You can find our Website at the following address: *www.wiaq.org.au*

Please take the time to read the brief histories that have been written, and largely drawn from the wonderful work by Alan Shawsmith VK4SS SK, a George Taylor Medallist, in his book 'Halcyon Days'. To seek out and obtain the book 'Halcyon Days' is perhaps one of the best ways to understand the pioneering spirit of amateur radio pathfinders and experimenters in Queensland from the earliest days.

One of the many highlights will be the Centenary Presidents' Luncheon on Saturday July 21st, which will be held in the Board Room at the Hervey Bay RSL in Pialba. Special guests will include National WIA President Michael Owen VK3KI, plus the previously mentioned members of the Queensland Centenary Committee. We are looking forward to all the Presidents of Queensland Radio Clubs to strongly consider venturing to beautiful Hervey Bay for this once in a lifetime event. Executives and club members are also invited, though numbers are limited. Please contact myself, Mike Charteris VK4QS by email at *mikevk4qs@gmail.com* to let me know if you would like to attend.

On Sunday July 22nd, following the Presidents' Centenary Luncheon on the Saturday, the Hervey Bay Amateur Radio Club will be hosting a free BBQ for all attending Presidents, members and guests. This will be held at the Hervey Bay SES Building on Old Maryborough Road, Hervey Bay. On this day Hervey Bay will host the Centenary call sign VK100WIQ, on HF from the SES Building. It is hoped that many will take the opportunity to work President Michael Owen, and others, on air with the Centenary call VK100WIQ. It is hoped that those travelling from afar to attend the Presidents' Luncheon, will perhaps make a weekend of it and experience beautiful Hervey Bay and the surrounding area.

Throughout the duration of the Centenary call sign period, from June 1st through to July 31st 2012, I trust that all radio amateurs in Australia and throughout the rest of the world will avail themselves of the opportunity to work VK100WIQ. There will also be Centenary QSL cards as well as a special Centenary Certificate for ten different club contacts with VK100WIQ. The cost structure for the Certificate will be similar to that of the VK100WIA certificate, but at this stage it has not been finalized.

So come one, come all, my fellow amateur radio operators, as we here in Queensland invite you to our Centenary, be you a WIA member or not. Come and share in some Queensland hospitality and radio fellowship throughout the Year 2012.

We, the Queensland Centenary Committee, look forward to us all celebrating our special one hundred year event.

WIA Inwards QSL Bureau

Geoff Atkinson VK3TL - WIA QSL Bureau

Seven boxes of cards, with a combined mass of 36 kg, awaiting postage labels prior to despatch to the State QSL Bureaux.

The boxes on the right of the table, waiting by the franking machine for postage labels, represent 36 kg of the 44 kg of cards shipped from the WIA office today (3 April 2012) to the State Bureaux. All the cards arrived within the space of one week, although four boxes had a total of 30 kg, arriving in two days. The cards were then sorted and despatched within a week of arrival.

Cards were primarily from France, Sweden, Germany, Japan, Bosnia and Spain.

State Bureau managers will be busy sorting to ensure cards reach their destinations as quickly as possible. Queensland received 12 kg of cards in this round of despatch.

WIA members can ensure prompt receipt of cards by making sure collection details are kept current at the pick-up point.

It is worth reporting that some cards are in fact quite old with QSOs dating back into the 1980s, and often for a known Silent Key. Please be assured cards are despatched as quickly as possible from WIA HQ. We have no explanation as to why some cards have been so long arriving.

Thank you to the volunteers in each State who sort and distribute the QSL cards. Your efforts are appreciated.

SOUTH-EAST RADIO GROUP

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VK5RMG/6

We're back! Yes, the SERG Convention and Australian Fox Hunting Championship will be held on the Queen's Birthday weekend – 9th and 10th June 2012.

The Convention will be at its usual home, the Margaret Street Scout Hall. Doors open at 12:00 noon on Saturday with the first fox hunt to start at 11:00 am from the Lakes area.

On Sunday, doors open at 9:00 am. Entry fee is $5 for the weekend.

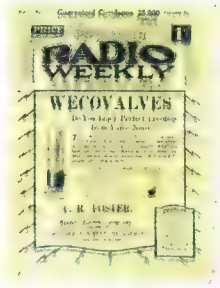
We will have the fires going at the hall to keep warm. With our Master Chef back on duty again this year, there will be plenty of fine food available to fill the spot.

Ross from Strictly Ham will be there. Stalls with second hand equipment and our Home Brew Contest will be bigger than ever.

Trophy Presentations will be 17:00 at the SERG clubrooms. Following the Presentations we will have a BBQ to catch up on the weekend's activities. All are invited.

Keep up to date at ***http://serg.mountgambier.org/*** or email *vk5sr@wia.org.au*

Hamads



WANTED – NATIONAL

Copies of Radio Weekly magazine.

The WIA Archive is seeking copies of Radio Weekly for copying and/or adding to the WIA Archive's shelves.

Little is known about this magazine. The WIA holds two copies only. Volume 1, Number 1 and Volume 2, Number 2. They contain about 36 pages and issues included articles of general radio interest in addition to the odd experimental article. The magazine was published in Melbourne commencing in February 1925 and claimed a circulation of 25000! For those who have responded to previous requests for copies of early magazines, thank you. We are gradually building up our collection of important Australian magazines which will be available to future researchers.

Please contact Peter VK3RV via email *vk3rv@wia.org.au* or c/o the National Office in Bayswater if you can help us locate copies of this magazine.

WANTED – ACT

Telereader CWR685E.

Contact Fred VK1RY, QTHR, Phone 02 6247 9886 or email *fwnryan@tpg.com.au*

FOR SALE – NSW

Any old military receivers, and the book 'Wireless today, 1936'.

Contact Nick L20106, on 02 9477 2134.

Wonnangatta Mayday

Tony Lathouras VK7VKT and Peter Freeman VK3PF

At around 0930 on 9 April 2012, a mayday call was made on 7090 kHz by VK3MOC who was in the Wonnangatta River valley region in the highlands of Victoria.

A forty year old male in a camping party had some seizures and was in a serious medical condition. The group was camped near the Wonnangatta Station Campsite. The location is extremely remote; with four-wheel drive only access. It is on the floor of the valley, with high mountain ridges on all sides. Adam VK3MOC made his way up to a hill in a 4WD with HF fitted and made the Mayday call.

Jack VK3AJK was the first to respond and took control of the frequency and the situation. He ascertained the location, situation etc. and contacted emergency services via telephone. Jack and others have a regular net on this frequency every morning. The other net members stood by, monitoring the traffic.

VK3AJK then became the relay person between the emergency services and the camping party as the precise GPS coordinates were transferred to the emergency operator as well as details of the specific medical condition. During critical phases, Jack simply held the telephone microphone up to the radio speaker as the details were passed, and then confirmed with the emergency operator that the information had been received. At times, Jack was struggling to make notes, handling the microphone and the telephone handset, all at the same time.

The decision was made that a medical evacuation would occur via a rescue helicopter.

Both parties were being received by Tony Lathouras VK7VKT 5-9.

VK3MOC then indicated that he was going to return to the valley floor where the rest of the camping party, including the patient. The final instruction passed by Jack VK3AJK was that the rescue helicopter asked that all vehicles in the camping party form a 50 metre diameter circle in a clearing with hazard lights flashing.

The weather had started to close in by this time.

Upon reaching the valley floor, Adam VK3MOC put out another call. Signals had dropped to 5-7 but perfectly readable into VK7 and VK3AJK had a perfect copy.

Several calls were made to establish that contact was still available between the two and indicating that the patient was stable. Adam VK3MOC then indicated that all vehicles were in position.

A short time later, Adam called back to say that the helicopter with medical team had landed, and thanked Jack for his assistance.

It was asked several times, with the same reply, that there was no mobile phone service in that area.

All involved remained on frequency until the helicopter had left the scene.

Later in the afternoon, Steve from Ambulance Victoria called Jack on the telephone to once again extend thanks to Jack and the amateurs for their assistance during the emergency situation.

All hope that the patient has a speedy recovery and full points to Jack and Adam who worked calmly during this event.

Contributions to Amateur Radio

AR is a forum for WIA members' amateur radio experiments, experiences, opinions and news.

Your contribution and feedback is welcomed.

Guidelines for contributors can be found in the *AR* section of the WIA website, at *http://www.wia.org.au/members/armag/contributing/*

Email the Editor: *editor@wia.org.au*

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The Amateur Service
... a radio communications service for the purpose of self training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique with a personal aim and without any pecuniary interest.
56 ITU Radio Regulations

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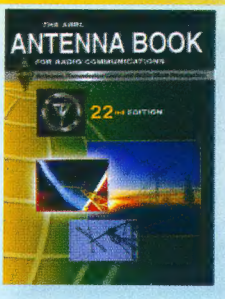

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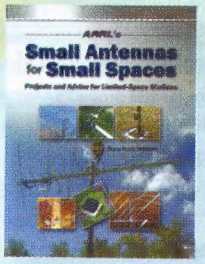

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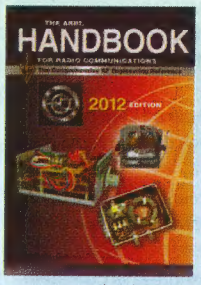

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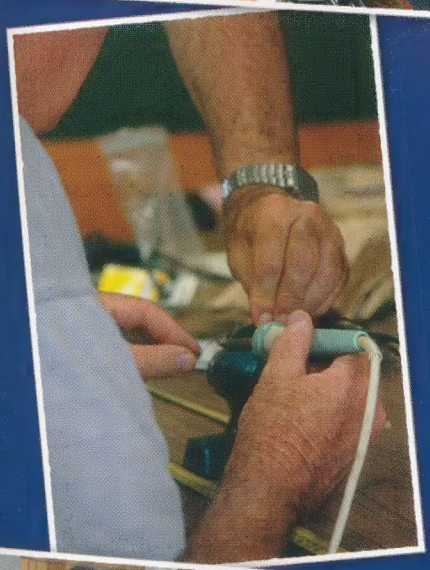

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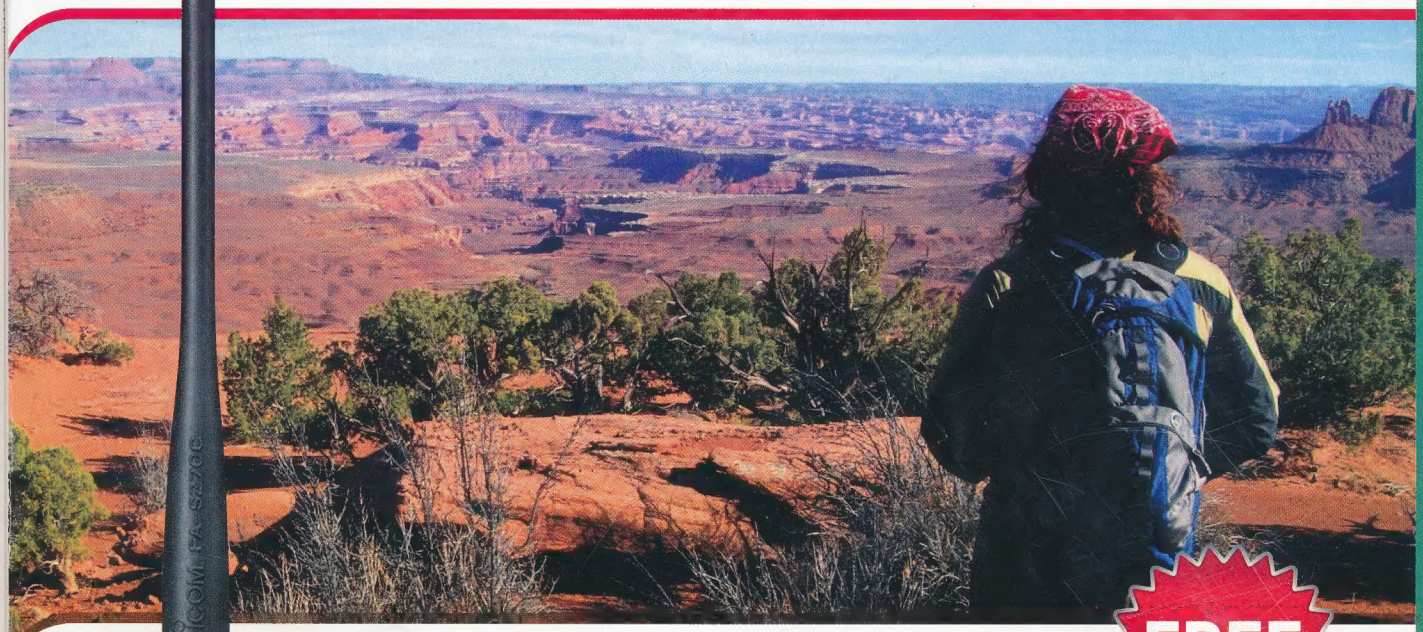

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